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M32

COMPOSITÆ.*

CHARLES F. MILLSPAUGH AND AGNES CHASE.

Herbs, shrubs, woody climbers, or rarely trees. Flowers perfect, pistillate, neutral, or monœcious or diœcious, borne on a common receptacle forming heads, subtended by an involucre of few to many bracts. Calyx tube completely adnate to the ovary, the limb (*pappus*) of bristles, awns, scales, teeth, or crownlike or obsolete. Corollas tubular or expanded into a ligule; heads composed of tubular flowers (*discoid*), of tubular and ligulate (*radiate*), or all ligulate (*ligulate*). Stamens usually 5, borne on the corolla and alternate with its lobes, their anthers united into a tube, often appendaged at the apex, sometimes sagittate or tailed at the base. Ovary 1-celled; ovule 1, anatropous; style of fertile flowers 2-cleft; stigmas marginal; style of sterile flowers commonly undivided. Fruit an achene. Seed erect; endosperm none.

ACHENE ENCLOSED IN A FALSE PERICARP.

Pericarp spinous:	
1-seeded	*Ambrosia.*
2-seeded	*Xanthium.*
Pericarp verrucose, obconical	*Nocca.*
rhomboidal:	
achene lenticular	*Sclerocarpus.*
triangular	*Melampodium.*
Pericarp smooth	*Milleria.*

ACHENE NOT ENCLOSED.

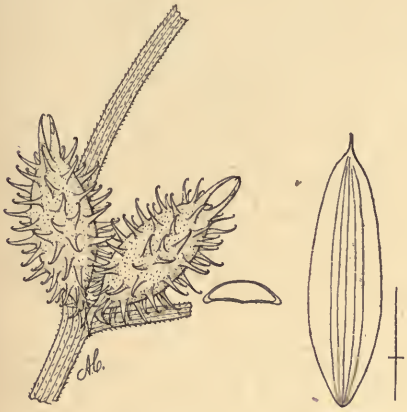
Corolla of ray flowers persistent:	
Achenes all dorsally compressed	*Parthenium.*
Achenes laterally compressed or triangular	*Sanvitalia.*
Corolla of disk flowers persistent	*Grindelia.*
Corollas all deciduous:	
Pappus none at maturity:	
achene oblong	*Artemisia.*
achene obovoid:	
10-12-ribbed	*Flaveria.*
5-ribbed	*Isocarpha.*
4-ribbed	*Elvira.*
not ribbed	*Helianthus.*
achenes cuneate:	
imperfectly lenticular	*Achillea.*
quadrilateral:	
apex depressed	*Montanoa.*
apex coronate	*Amellus.*
apex bicornuate	*Eclipta.*
Pappus coroniform:	
crown minute, entire	*Alomia.*
crown prominent, 4-toothed	*Borrichia.*
Pappus a crateriform disk	*Baltimora.*

* The cuts present a portion of the inflorescence or a single head natural size, unless otherwise indicated; the achene magnified (the natural size being indicated by a cross giving both diameters, the dotted line representing the pappus); and a cross-section of the achene at its greatest diameter.

Pappus a cluster of short, stout bristles	*Spiracantha.*
Pappus of long, capillary bristles:	
bristles few—	
achene nerveless	*Conyza.*
5-nerved	*Pluchea.*
bristles numerous—	
achene constricted into a neck—	
(section) biconvex	*Porophyllum.*
(section) concavo-convex	*Chaptalia.*
(section) quadrilateral	*Lactuca.*
achene devoid of a neck—	
compressed:	
ribs 10, smooth	*Baccharis.*
ribs 8, rugose	*Sonchus.*
subterete:	
apex discoid	*Erechtites.*
apex not discoid	*Senecio.*
Pappus of slender, barbed bristles:	
achenes (section) pentagonal	*Eupatorium & Willughbœa.*
terete	*Coleosanthus*
quadrilateral—	
2-nerved, pubescent	*Leptilon.*
8-nerved, glabrous	*Aster.*
achene (section) oblong	*Pectis* § *Pectothrix.*
lenticular	*Trixis.*
Pappus of plumed bristles:	
achene cylindrical, obconoid	*Tridax.*
achene lenticular, oblanceolate	*Carduus.*
Pappus of equal scales:	
achene pentagonal, oblong	*Ageratum.*
achene 12-angled, turbinate	*Helenium.*
achene lenticular, obconoid	*Calea.*
Pappus of unequal scales	*Pectis* § *Eupectis.*
Pappus of awns:	
awns united at the base	*Ucacou.*
awns distinct—	
achene obovate—	
winged, attenuate at base	*Verbesina.*
wingless, not attenuate lenticular:	
awns very slender	*Spilanthes.*
awns unequally winged	*Salmea.*
wingless, not attenuate, flattened	*Encelia.*
achene linear:	
awns smooth	*Pectis* § *Pectidium.*
awns barbed	*Bidens.*
achene fusiform attenuate into a neck	*Cosmos.*
Pappus of awns and scales:	
achenes constricted into a neck—	
neck curved, awns prominent	*Plagiolophus.*
neck erect, awns inconspicuous	*Zexmenia*
achenes not constricted—	
quadrilateral	*Tithonia.*
sharply 3-4-angled	*Zexmenia* § *Lipochæta.*
lenticular—	
10-ribbed, awns genuflexed	*Distreptus.*
not ribbed, awns straight:	
scales connate—	
achene obovate	*Viguiera.*
achene linear	*Tagetes.*
Pappus of scales and bristles:	
bristles equal, distinct	*Vernonia.*
bristles unequal, united below	*Dysodia.*

XANTHIUM L. Sp. Pl., 987.

Heads unisexual, the fertile with 2 apetalous pistillate flowers in a closed bur-like, beaked involucre, only the style-branches exserted through an aperture in the beak; the sterile of numerous staminate flowers in an open polyphyllous involucre, the heads in a raceme. Receptacle of sterile heads cylindrical, chaffy; scales partly enclosing the flowers. Achenes dorsally compressed, oblong; pappus none. Coarse monœcious herbs with inconspicuous heads.



Xanthium strumarium L. Sp. Pl., 987.

A coarse annual, with angled, hispid stem and branches and large alternate, petioled, 3-lobed, coarsely dentate, scabrous leaves. Inflorescence of unisexual clusters, the staminate capitate-clustered at the ends of the striate, hispid branches. Fertile heads sessile, 2–4 together, in the axils, of the leaves, subtended by 4–6 small, linear bractlets. Mature involucre (fruit) 1.3–1.5 x 2.3–2.5 cm. including spines (.8 x 1.9 cm. exclusive of spine) ellipsoid, hispidulous; beaks erect, slightly hooked, 6–7 mm. long; spines rather slender 4–5 mm. long. Achene slatey-fuscous, 4 x 13–15 mm., oblong-lanceolate, abruptly acuminate into a slender beak; in section convexo-concave, the ventrum nearly plane, 3 ridged, dorsum faintly 5 nerved; glabrous.

Hab.—"Herb, 2 feet high, uncommon near Merida, where it has probably been introduced in foreign baled hay," *Gaumer 1145* (*Xanthium Canadense* Field Col. Mus. Bot. 1:397) Progreso *2512*.

These Yucatan specimens are immature; the figure is drawn from *Ricksecker 266*, Island of St. Croix, which matches Dr. Gaumer's specimens.

AMBROSIA L. Sp. Pl., 987.

Heads unisexual, the fertile with a single apetalous, pistillate flower in a closed bur-like involucre, only the style branches exserted; the sterile of numerous staminate flowers in an open gamophyllous involucre, the heads in a raceme above the fertile ones. Receptacle of sterile heads flat, with filiform chaff among the outer flowers. Achene turgid, subglobose; pappus none. Monœcious herbs with racemose panicled, inconspicuous heads.

Ambrosia hispida Pursh Fl. Am. Sept. Suppl., 743.

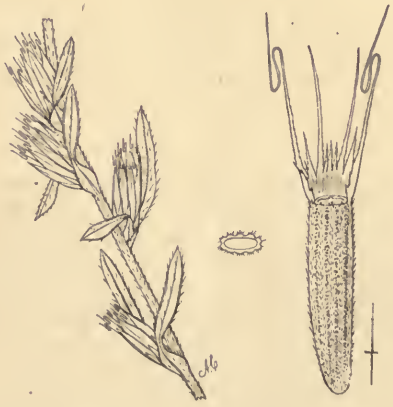
Spreading from a suffrutescent base, the branches prostrate, sometimes rooting at the nodes, terete, hispid. Leaves opposite, petioled, twice or thrice pinnatifid, thickish, strigose-hispid. Inflorescence a

terminal panicle of elongated racemes bearing the fertile heads on the lower part and the sterile heads drooping on short, slender, hispid pedicels along the upper part; rachis slender, hispid. Fertile heads sessile in opposite clusters of 6–10, subtended by foliaceous hispid bracts. Mature involucre (or fruit, shown magnified 5 diameters in figure) 1.8 x 3.6–4 mm., oval-obovoid, bearing a stout obtuse beak and 3 or 4 short acute tubercles, a faint transverse ridge below them, the fruit glandular-dotted above and clothed with long white hairs, glabrate or nearly so at the base. Achene black, 1.7 x 2 mm., ovoid-globose, abruptly acute; in section triangular, the facets convex, glabrous.

Hab.—Cozumel 1885, *Gaumer* (Oliver); "very abundant at the port of Silam, April," *Gaumer 680;* "prostrate on the sands, always extending itself toward the beach, sometimes 6 meters," northeast point of Cozumel, *Millspaugh Pl. Utowanæ 1577*, coast dunes at Progreso, *1645*.

DISTREPTUS Cass. Bull. Soc. Philom., 1817, p. 66.

Heads homogamous, flowers perfect, fertile, tubular. Involucre oblong, of herbaceous bracts imbricated in 2 series, unequal. Receptacle naked, plane. Achene dorsally compressed, 10 ribbed; pappus of several unequal awns and scales, the lateral pair of awns longest and twice reflexed. Perennial herbs, heads few flowered, usually aggregated in small glomerules.



Distreptus spicatus (Juss.) Cass. Bull. Soc. Philom., 1817, p. 66.

Elephantopus spicatus Juss.

An erect, branching herb, with terete, striate, sparsely pilose stems and branches, and alternate, sessile, elliptic or linear, dentate or subentire, sparsely pilose leaves. Inflorescence of axillary, interrupted spikes, 15–25 cm. long, arranged in a leafy panicle. Heads 4 flowered, solitary or 2 or 3 in a sessile narrow glomerule subtended by a pair of

linear-oblong, sparsely hirsute, punctate leaves; glomerules 1–1.2 cm. long. Involucral bracts pale, with green tips, appressed, acuminate, glabrous or the outer sparsely hirsute, ½ the length of the inner. Corolla white, nearly regular, 5 cleft. Receptacle minute. Achene brown, 1–1.2 x 5–6 mm.; oblong, tapering to the base; in section elliptic; strongly 10 ribbed, the ribs hirsute, interspaces dark, glandular; pappus of rigid, persistent, unequal awns and denticulate scales, interrupted on the posterior side, the lateral pair of awns elongated and twice reflexed, 5–5.5 mm. long.

Hab.—"Herb 3 feet high, in moist lands, not common, Nov.," Izamal, *Gaumer 1015;* common at Yot Ɔonot, *1324.*

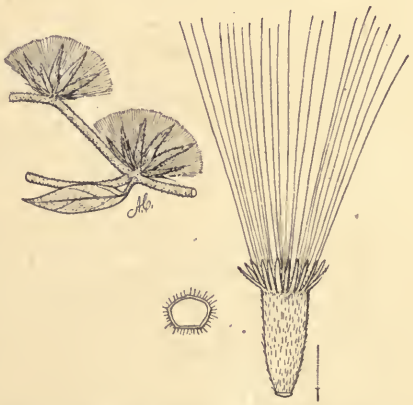
VERNONIA Schreb. Gen. Pl., 2:541.

Heads homogamous, discoid, flowers perfect, fertile, tubular. Involucre wide campanulate (in our species), of dry or subherbaceous bracts, imbricated in several series, unequal. Receptacle naked, plane. Achene subterete, 10 nerved, villous; pappus in 2 series, outer of few short scales, inner of numerous slender bristles. Herbs or shrubs; heads many flowered, disposed in cymes.

Vernonia arborescens (L.) Swartz Ind. Occ., 2:132.

Conyza arborescens L.

An erect, divaricately branched, fruticose herb, with terete, striate canescent stem and branches, and alternate, short-petioled, ovate or elliptic, acuminate, entire, veiny leaves pubescent above, pilose-canescent below. Inflorescence scirpoid-cymose, terminating the branches or axillary. Heads sessile, usually subtended by a small leaf, 15–25 flowered, 8 mm. high, as broad or broader. Involucral bracts in 2–3 series, densely canescent, outer subulate, spreading, inner acuminate, erect or appressed. Corolla regular, 5 cleft, purplish blue. Receptacle faveolate. Achene ashy-brown, .7–.8 x 1.6–1.8 mm., cuneate-oblong; in section teretopentagonal; apex truncate, densely villous except the basal callus, 10 nerved, 5 nerves prominent and 5 intermediate faint; pappus tawny, outer of linear, denticulate scales, .3–.5 mm. long, inner of numerous scabrous, capillary bristles, 4–6 mm. long.



Hab.—"Two to three feet high, rare," Calotmul, *Gaumer 1311,* Yot Ɔonot *1325,* "very rare; but one plant seen."

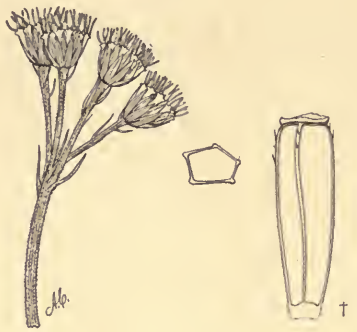
A variable species. Yucatan specimens have heads somewhat larger than other West Indian plants, and the subtending leaf very small or wanting; leaves larger than common, and little or not at all rugose.

ALOMIA H. B. K. Nov. Gen. et Sp., 4:151, t. 354.

Heads homogamous, discoid, flowers perfect, fertile-tubular. Involucre hemispheric, of herbaceous bracts, imbricated in 2–3 series, unequal. Receptacle naked, convex. Achene 5 sided, not compressed; pappus none or a minute crown. Herbs, with small paniculate heads.

Alomia ageratoides H. B. K. Nov. Gen. et. Sp., 4:151, t. 354.

An erect or ascending, diffusely branching annual, with terete, striate, pubescent or glabrate stem and branches, and opposite, long-petioled, ovate, crenate, nearly glabrate leaves. Inflorescence a cymose panicle of 3-10 heads on a slender peduncle. Heads many flowered, 6–7 mm. high, as broad or broader, on striate, finely canescent, bracteate, slender pedicels. Involucral bracts in 2 series, lanceolate, acute, having 2 strong nerves and thin ciliolate margins. Corolla 5 lobed, white with light purple lobes. Receptacle faveolate. Achene, except the white callus, black and shining, .4–.5 x 1.6–1.7 mm., oblong, little narrowed at the base, apex truncate; in section depressed-pentagonal, strongly 5 nerved, a few scattered hairs on the nerves, otherwise glabrous; pappus reduced to a minute crown.



Hab.—Tekanto and Tunkas, Feb. and March, 1890, *Stone 190, 238* (in Herb. Acad. Sci. Phila.); Cozumel Island at San Miguel, *Millspaugh Pl. Utowanæ 1492*, and east shore, *1603*.

AGERATUM L. Sp. Pl., 839.

Heads homogamous, discoid, flowers perfect, fertile, tubular. Involucre wide campanulate, of herbaceous bracts imbricated in 2–3 series, subequal. Receptacle naked, plane or convex. Achene 5 sided, not compressed; pappus 1-serial, of aristate scales. Herbs, with small paniculate heads.

Ageratum intermedium Hemsl. Biol. Cent. Am., Supplement p. 102.

An erect or ascending, branching annual, with terete, sparsely white-pilose stem and branches, and opposite, long-petioled, ovate, acute, crenate-dentate, sparsely pilose leaves. Inflorescence loosely cymose-panicled, branches and pedicels slender, striate, bracteate. Heads many flowered, 5 mm. high, 8–10 mm. broad. Involucral bracts in 2 series, nearly equal, oblong, acuminate, having 2 strong nerves and hyaline margins. Corolla light purple, 5 lobed. Receptacle convex. Achene (except the white callus) black, .4 x 1.5–1.7 mm., oblong, little narrowed at the base, apex trun-

cate; in section sharply 5 angled, the facets nearly plane: strongly 5 nerved, the nerves sparingly weak barbed; pappus of 5 lanceolate, erose-dentate, aristate scales, 1.5–1.8 mm. long.

Hab.—Common, Merida, Jan. 4, 1865, *Schott 208* (*Ageratum conyzoides* Field Col. Mus. Bot. 1:394); Cozumel, 1885, *Gaumer* (Oliver,* type locality); campo about Izamal, Jan. 13, 1895, *Millspaugh Armour Exped. 72* (*Ageratum corymbosum* Field Col. Mus. Bot. 1:51); Merida, *Valdez 13* (*Ageratum conyzoides Ibid.* 1:323); open lands, Izamal, Jan. to Dec., *Gaumer 395* (*Ageratum corymbosum Ibid.*) robust plants with unusually large leaves *2508*, San Anselmo, *1735*, Chichankanab, *1736*, Izamal, *Cæc. et Ed. Seler 3925*.

Called Oiciilchay "efficacious herb" by the Mayas; "Bakelus" by Yucatecs; and "Flor de San Juan" in Spanish. The herb is bound upon the temples by the natives to check epistaxis.

EUPATORIUM L. Sp. Pl., 836.

Heads homogamous, discoid, flowers perfect, fertile, tubular. Involucre oblong, ovoid or campanulate, of numerous membranaceous bracts, imbricated in few to many series, outer gradually shorter. Receptacle naked, plane, convex or conic. Achene 5 angled, little or not at all compressed; pappus of numerous upwardly scabrous bristles in 1 series. Herbs, shrubs, or small trees; heads few to many flowered, disposed in corymbose or cymose panicles.

Achene with 5 intermediate nerves	*albicaule.*
Achene simply 5 nerved:	
Base long attenuate	*daleoides*
Base abruptly attenuate:	
Achene 2.2 mm.	*aromatisans*
Achene 4-5 mm.	*conyzoides*
Base not attenuate:	
Pappus persistent	*pycnocephalum*
Pappus caducous	*Guadalupense*

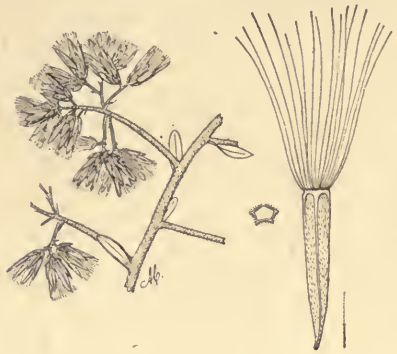
Eupatorium daleoides (DC.) Hemsl. Biol. Cent. Am. Bot., 2:95.

Critonia daleoides DC.

A shrub or small tree with grayish bark, branches terete, smooth; leaves opposite, petioled, elliptic-oblong, acute, serrate or subentire, glabrous, with pubescent veins, dark green and glossy. Inflor-

*Cited in Supplement to Biol. Cent. Am. by Prof. D. Oliver; this collection of Dr. Gaumer's, made in 1885 and 1886, on Cozumel, Holbox, and Mugeres Islands, is in Kew herbarium; a few specimens also in Herb. gray; Herb. U. S. Natl. Mus.; and Hb. Torrey, N. Y. Bot. Garden.

escence of compound terminal and axillary cymes, branchlets and pedicels rigid, rusty glandular-hirsute. Heads 4 or 5 flowered, 6 mm. high, 5 mm. or less broad. Involucre narrowly campanulate, bracts loosely imbricated in 3 or 4 series, outer rufous, ovate, subacute, minutely glandular-pubescent or nearly glabrate; inner pale, lanceolate, ciliolate at the obtuse apex. Corolla white. Receptacle minute, convex. Achene dull brown, .6 x 3.1–3.3 mm., narrowly obconoid, attenuate at the base, apex truncate; in section unequally 5 sided, the angles prominent, the facets somewhat concave; 5 nerved, the nerves glabrous or with a few scattered hairs, internerves glandular-hirsute; pappus pale stramineous, 4 mm. long.

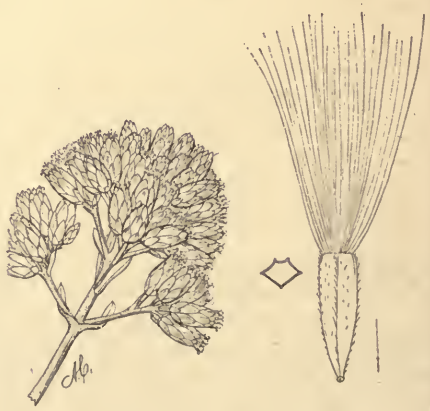


Hab.—Moist soil near the Caleta, Cozumel, *Millspaugh Pl. Utowanæ 1510* (*Eupatorium hebebotrya* Field Col. Mus. Bot. 2:105).

Called XTOKABAL, "Astringent." The plant here grows as a tree, with a trunk 5 to 10 cm. in diameter and a height of 3 to 8 meters. A decoction of the bark, leaves, and flowers is used as a domestic remedy for gonorrhœa.

Eupatorium aromatisans DC. Prod., 5:150.

A robust, semi-woody herb with smooth, striate-sulcate, subangled stems and branches and opposite, petioled, large, broadly ovate, acute, coarsely serrate leaves, short decurrent on the petiole forming a cuneate base. Inflorescence a dense, rounded, cymose panicle with opposite, divaricate, striate, subtomentose branchlets; pedicels short, slender. Heads 10–12 flowered, 7 mm. high, 2.5–3 mm. broad. Involucre ovoid, bracts appressed, in 4–5 series, oblong, obtuse, striate, ciliolate, tinged with rufous, the outer successively shorter. Corollas white (?). Receptacle minute, convex. Achene light brown, .6 x 2.2 mm.; oblong-obconoid, abruptly attenuate at base, apex truncate; in section unequally 5 sided, the angles acute, the facets plane; 5 nerved, sparsely pilose, especially on the nerves; pappus stramineous, 4–5 mm. long.



Hab.—"Common, both wild and in cultivation; used as an aromatic in tobacco," "Merida, *Valdez 92* (*Eupatorium quadrangulare* Field Col. Mus. Bot. 1:324); herb 10 feet high, in general cultivation at Izamal, March, *Gaumer 552* (*Eupatorium populifolium Ibid.*).

"Chiople,"* this name is given by Dondé in his Lecciones Bot. as the Maya designation of this species. I cannot, however, place it as Maya; it is doubtless of Spanish-Maya origin. Cuevas says:† "The leaves, macerated in alcohol and applied topically with friction to the seat of pain, are much used as a remedy for rheumatism. The alcoholic tincture, in doses of a few drops before each meal, is much used as a remedy for stomach disorders."

Eupatorium albicaule Sch. Bip. in Klatt, Leopoldina, 20:89.

A shrub with terete, striate stems and branches and whitish bark, young branches glandular-puberulent; leaves opposite, short-petioled, falcate-ovate, acuminate, crenate-serrate or subentire, glabrous, with pubescent veins. Inflorescence of dense cymose panicles, terminating short, leafy branches, peduncles and pedicels glandular-canescent. Heads 12–15 flowered, 6–7 mm. high, as broad or nearly so. Involucre campanulate, bracts loosely imbricated in 2–3 series, subacute, glandular-puberulent, the outer lanceolate, inner linear-lanceolate. Corolla white, the lobes glandular. Receptacle minute, convex. Achene chestnut; .4–.5 x 2mm., oblong, little narrowed at the base, subcompressed; in section oblong in outline, unequally 10 angled, 10 nerved, some of the nerves usually faint, sparsely glandular-hirsute, internerves glandular above; pappus pale stramineous, 4–4.5 mm. long.

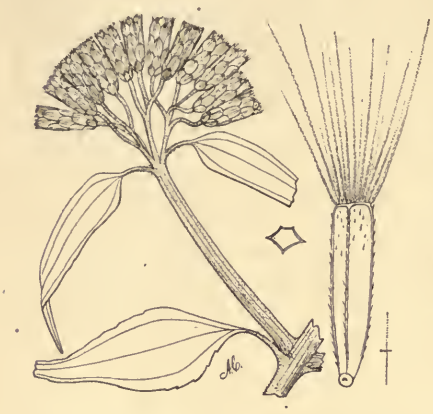
Hab.—Cozumel 1885, *Gaumer 122* (Oliver), (E.— sp. Hemsley Field Col. Mus. Bot. 1:51, *E. drepanophyllum* Klatt, *Ibid.* 1:324); "shrub 10 feet high, flowers white, Nov. to March, Big Mound, Izamal, *Gaumer 608;* common in brushlands about Izamal, *824.* Big Mound, Izamal, March 11, 1903 *Cæc. et. Ed. Seler 3919a, 3921.*

Eupatorium conyzoides Vahl Symb., 3:96.

An erect or reclining, slender shrub, with terete or subangled, striate stem and divaricate branches, and opposite, petioled, ovate, acuminate, 3 nerved, variously toothed leaves, more or less tomentulose and punctate beneath. Inflorescence an elongated, divaricately

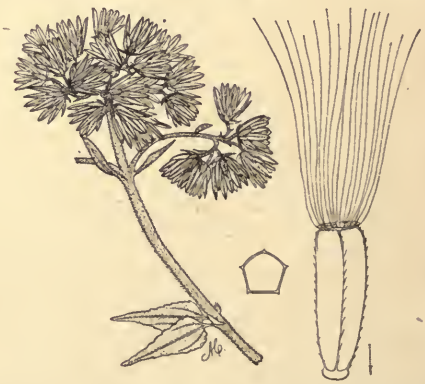
*Called Chiopk by the Mayas.
†Ensayo Botanico, 1894: 13.

branched, leafy, corymbose panicle; branchlets and pedicels rigid, striate, puberulent. Heads about 20 flowered, 9–10 mm. high, 3–3.5 mm. broad. Involucre cylindrical bracts in 4–6 series, appressed, oblong, obtuse or apiculate, several nerved, ciliolate at the summit. Corolla pale blue or white. Receptacle convex to clavate. Achene black, .6–.65 x 4–5 mm., oblong, narrowed at the base; in section unequally 5 angled; 5 nerved (often 3 or 4 nerved by suppression of the dorsal nerves), hirsute on the nerves, a few scattered hairs in the internerves above; pappus bristles tawny, 3–5 mm. long.



Hab.—Suburbs of Merida, Dec., 1864, *Schott 144;* "in brushlands, about Izamal, Oct.," *Gaumer 914;* "ascending 15 feet among shrubs and on old fences, flowers heliotrope, Izamal, Oct.," *953;* San Anselmo *2048;* Chichankanab *2049, 2089;* Calotmul *2087;* Silam *2088;* Xcholac, *Stone 227;* campo about ruins, Chichen Itza, Jan. 17, 1895, *Millspaugh Armour Exped. 115;* old fields near San Miguel, Cozumel, *Millspaugh Pl. Utowanæ 1489;* in the arid stony scrubland south of Progreso, March 5, *1688* (*Eupatorium ivæfolium*, Field Col. Mus. Bot. 2:105); old henequen plantation near Merida, Feb. 11, 1903, *Cæc. et Ed. Seler 3832.*

A variable species. *Gaumer 953, 2087, 2088, 2089,* and *Millspaugh Pl. Utowanæ 1688.* are diffusely branching plants with small corymbs, heads and achenes, and leaves little or not at all punctate below; *Millspaugh Pl. Utowanæ 1489* has corymbs, heads and achenes unusually large, and in appearance resembles Eupatorium odoratum L.



Called XTOKABAL* "astringent" by the Mayas.

Eupatorium pycnocephalum

Less. Linnæa, 6:404.

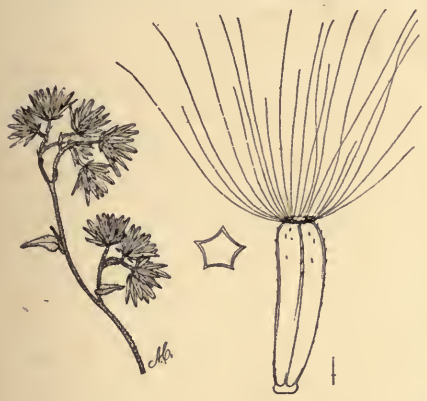
An erect, slender, perennial herb, with terete, glabrate or puberulent stems and branches, and opposite, petioled, deltoid-ovate or subcordate, acuminate, crenate-dentate, soft pubescent leaves. Inflorescence of dense cymes

*The Maya X denotes the feminine gender. It is here prefixed to Tokabal (Trixis frutescens), but whether this is simply to differentiate the plants, or whether it denotes that this species is used in the treatment of females, I cannot say.

on long, bracteate peduncles, terminal and axillary; peduncles and pedicels slender, somewhat flexuous, puberulent. Heads about 25 flowered, 5–5.5 mm. high, as broad or nearly so. Involucre campanulate, bracts in 2–3 series, more or less spreading, the outer lanceolate, acute, cuspidate, puberulent; inner narrowly oblong, obtuse, ciliolate-hyaline margined at the summit, exceeding the flowers. Corolla light purple. Receptacle slightly convex. Achene black, .35 x 1.3 mm.; oblong, little narrowed at the base; in section 5 angled, the dorsal facets usually convex; 5 nerved, the nerves hispidulous; pappus bristles white, capillary, 2 mm. long.

Hab.—"Herb, 6 feet high, at aguadas near Izamal, not common, October" *Gaumer 1022.*

Eupatorium Guadalupense Spreng. Syst., 3:414.



An erect, branching herb, with terete, striate, glabrate stem and branches, and opposite and alternate, petioled, rhombic-ovate, acute, crenate, nearly glabrous leaves. Inflorescence a loose, open, leafy, cymose panicle; branches and pedicels slender, puberulent. Heads about 15 flowered, 4–5 mm. high, as broad or broader. Involucre campanulate, bracts in 2 or 3 series, spreading; the outer lanceolate, acute, puberulent; inner linear-oblong, obtuse or minutely apiculate, nerved, glabrous, much exceeding the flowers. Corolla violet. Receptacle flat. Achene dark brown, .35–.4 x 1.5 mm., oblong, slightly rounded at apex and narrowed at base; in section unequally 5 angled, the facets concave; 5 nerved, hirsute on the nerves above and sometimes sparsely so between them; pappus bristles white, capillary, 1–2.5 mm. long, caducous.

Hab.—Cozumel, 1886 *Gaumer* (Oliver) (*Eupatorium paniculatum* Schrad. Field Col. Mus. Bot. 1:51); "herb, 3 feet high, common," Pocoboch, *Gaumer 1317;* Calotmul *2303.*

Called Xultoxiu "Introduced weed" by the Mayas, who consider the species exotic.

WILLUGHBÆA* Neck. Elem., 1:82.

Heads homogamous, discoid, flowers perfect, fertile. Involucre oblong of few subequal bracts in 2 series. Receptacle naked, small, plane. Achene 5 angled; pappus of many bristles in 1–2 series, connected at base by an annulus. Herbaceous or woody vines, heads 4 flowered, in cymose or corymbose panicles.

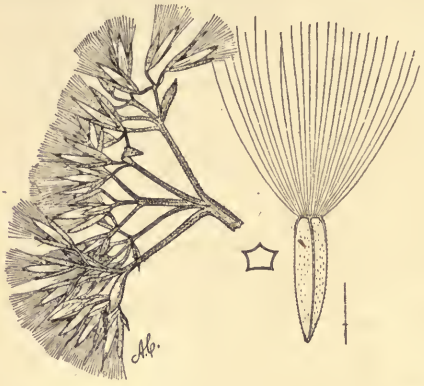
Achenes attenuate at the base, internerves glandular-puberulent or glabrate	*cordifolia.*
Achene not attenuate, internerves resin dotted	*scandens.*

*The separation of this genus from Eupatorium is questionable.

Willughbæa cordifolia (L.) Kuntze Rev. Gen. Pl., 1:372.

Cacalia cordifolia L.

A climbing perennial, frutescent at base, with striate-angled branches, and opposite, petioled, cordate, acute, angular-dentate, softly pubescent leaves. Inflorescence an elongated panicle of opposite, long-peduncled, flat-topped corymbs; branches and pedicels angled, glandular-puberulent. Heads 9–10 mm. high, 5–7 mm. broad, subtended by a lanceolate bractlet half the length of the involucre. Involucral bracts loosely imbricated in 2 series of 2 each, lanceolate, acute, the outer glandular puberulent, inner glabrate or puberulent at the summit exceeding the outer. Corolla white (?). Achene olive brown, .6–.8 x 3–3.3 mm., oblong, attenuate at the base; in section depressed 5 angled, the facets concave; 5 nerved, minutely hispidulous on the nerves, sparsely glandular-pubescent between them, or nearly glabrate; pappus bristles pale rusty, barbellate, 4–5 mm. long.



Hab.—About Nohcacab, Nov. 1865, *Schott 716* (*Mikania cordifolia* Willd. Field Col. Mus. Bot. 1:395).

Willughbæa scandens (L.) Kuntze Rev. Gen. Pl., 1:371.

Eupatorium scandens L.

A twining, perennial herb with striate stem and branches and opposite, petioled, hastately-cordate, acuminate, repando-dentate leaves, nearly glabrous or puberulent beneath. Inflorescence of compound cymose clusters terminating leafy branchlets; branchlets and pedicels compressed, sparsely glandular-pubescent or nearly glabrate. Heads 5–7 mm. high, 3 mm. or more broad, subtended by an obovate, acuminate bractlet nearly as long as the involucre. Involucral bracts imbricated in 2 series of 2 each, lanceolate, acuminate, minutely glandular or glabrate, ciliolate at the summit, the inner little longer than the outer. Corolla white or pinkish. Achene olive brown, .5 x 2.4–2.7 mm., oblong, narrowed at the base; in section 5 angled, the facets slightly concave; 5 nerved, nerves glabrate, internerves resin dotted; pappus bristles pinkish-tawny or flesh color, hispidulous, 4–5 mm. long.

Hab.—"Vine 15 feet, flowers white, common at Xcholac, Jan. to Feb.," *Gaumer 443* (*Mikania scandens* Willd. Field Col. Mus. Bot. 2:324).

In Yucatan and West Indian specimens the pappus is usually more or less pinkish, while in those from the United States the pappus is white.

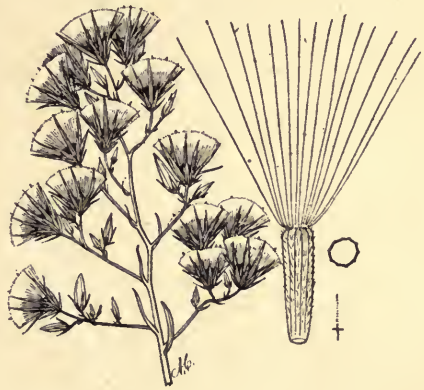
COLEOSANTHUS Cass. Dict., 10:36.

Heads homogamous, discoid, flowers perfect, fertile. Involucre campanulate, of narrow, striate bracts, imbricated in 2 series. Receptacle naked, plane or convex. Achene 10 ribbed, pappus of many slender bristles in 1 series. Herbs or shrubs, heads few to many flowered, in panicles or cymes.

Coleosanthus diffusus (Vahl) Kuntze Rev. Gen. Pl., 1:328.

Eupatorium diffusum Vahl.

An erect annual, branching above, with subangled brown-puberulent stem and branches, and opposite, petioled, rhombic-ovate or subcordate, acuminate, dentate leaves. Inflorescence an elongated, diffuse, cymose panicle; the main axis and lower part of branches puberulent, secondary branches and pedicels glabrate, slender. Heads 7–12 flowered, 7 mm. high 8–10 mm. broad. Involucral bracts in 2 series, loosely spreading, narrowly lanceolate, acuminate, strongly nerved, the outer ciliolate, the inner glabrate. Corolla white. Receptacle plane. Achene dull black, .5 x 1.9–2 mm. subcompressed cylindrical, little narrowed at base, apex truncate; in section, elliptical; 10 ribbed, minutely hirsute; pappus bristles white, nearly smooth, 4 mm. long.



Hab.—"Herb 10 feet high, uncommon in fields and brushlands near Izamal, flowering from December to March," *Gaumer 1080* (*Brickellia diffusa* A. Gray Field Col. Mus. Bot. 1–394).

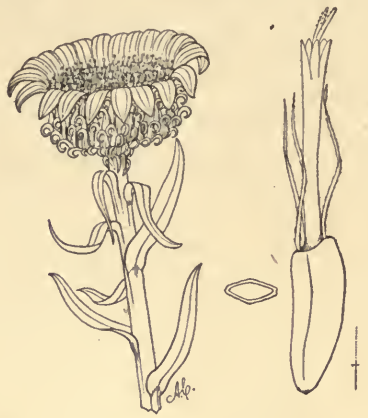
GRINDELIA Willd. Ges. Nat. Fr. Berl. Mag., 1807, p. 259.

Heads heterogamous, radiate; rays pistillate fertile, ligulate; disc flowers perfect, fertile or sterile, tubular. Involucre depressed hemispheric, of many coriaceous bracts, imbricated in many series, the outer gradually shorter. Receptacle naked, plane or convex. Achene laterally compressed, hard, 4–5 ribbed; pappus of 2–8 deciduous awns or bristles. Resinous herbs, with solitary heads of yellow flowers.

Grindelia nana Nutt. Trans. Am. Phil. Soc., N. S. 7:314.

A slender, erect annual, branching above, with smooth, striate

stem and branches and alternate clasping, pale, linear-lanceolate or spatulate, apiculate, subentire leaves. Heads solitary, 12–15 mm. high, 2.5–3 cm. broad; ray flowers about 20, disk flowers numerous.



Involucral bracts linear-lanceolate, coriaceous with green revolute-squarrose tips, strongly resinous. Corolla of ray flowers with short tube, ligule oblong-elliptic, acute, entire, 8–10 mm. long, spreading or somewhat revolute; disk flowers fertile, cylindrical, 5 cleft. Receptacle slightly convex. Achene pale brown, 1.3 x 3.7–4 mm., rhomboid-oblong narrowed at the base, sublunate; in section compressed lozenge-shaped, or in achene of ray flowers 3 sided; glabrous; awns 2–4 (mostly 3) flattened, twisted, hispid-denticulate, 4–4.5 mm. long, caducous, the corollas more or less persistent.

Hab.—Campo near Merida, 1887. *Millspaugh 33.*

The range of Grindelia nana Nutt. as given in Synoptical Flora of N. Am. (1, part 2:119), is "Washington and east to N. W. Wyoming, south to Shasta, California," and one collection of the species at Santa Cruz, California, is considered "much out of range." The above is the only specimen collected in Yucatan, this was probably introduced with imported hay. Our specimen has leaves entire or with a few teeth at the summit or base.

ASTER L. Sp. Pl., 872.

Heads heterogamous, radiate; rays pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre campanulate, turbinate, or hemispheric, of many herbaceous bracts, imbricated in several series, the outer gradually shorter. Receptacle naked, plane or convex. Achene laterally compressed, hard, nerved; pappus of slender numerous bristles in 1 series. Herbs, heads corymbose or paniculate.

Aster lævis L. Sp. Pl., 876.

An erect, smooth, perennial herb, branching above, with terete, striate stem and alternate, ovate or oblong to lanceolate leaves, contracted below into a winged petiole, upper with auriculate or subcordate, partly clasping base. Inflorescence a cymose leafy panicle, branches and pedicels angled, glabrate or nearly so. Heads 10 mm. high, 20–22 mm. broad, ray flowers 15–25, disk flowers numerous. Involucre turbinate, bracts in 3–4 series, rigid, erect, appressed, lanceolate, acute, with dark green, ciliolate, mucronate tips. Ligules pale violet, oblong, entire, 10–12 mm. long, spreading; disk corollas brownish purple, 5 lobed. Receptacle slightly convex. Achene strami-

neous, 1 x 2.2–2.5 mm., rhomboid-oblong, narrowed at the base; in section lozenge-shaped; 10 nerved, glabrate when mature, undeveloped achenes usually sparsely pubescent; pappus bristles tawny, barbellate, 5 mm. long.

Hab.—Brought to Yucatan by Dr. Gaumer in 1889, now wild all about his enclosures, a perpetual bloomer, Izamal *Gaumer 857*. (*Aster Novi-Belgii* L. Field Col. Mus. Bot. 1:323.)

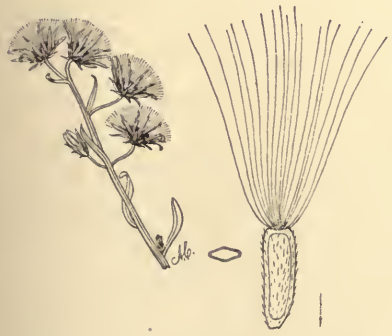
LEPTILON Raf. Am. Month. Mag., 2:268.

Heads heterogamous, radiate, rays pistillate, fertile, ligulate, inconspicuous, in several series; disk flowers perfect, fertile, tubular. Involucre campanulate, of narrow bracts imbricated in 2–3 series, the outer shorter. Receptacle naked, plane. Achene laterally compressed; pappus of numerous fragile bristles in 1 series. Annual or biennial herbs with small heads, racemose or panicled.

Leptilon Canadense (L.) Britton & Brown Ill. Fl., 3:391.

Erigeron Canadensis L.

A strict, erect annual, with striate-sulcate stem, sparsely hispid or glabrate, and alternate, sessile, linear, subentire, hispid-ciliate leaves. Inflorescence an elongated panicle; branches and pedicels angled, subsulcate, sparsely pubescent. Heads 5 mm. high, 6–8 mm. broad, about 40 flowered. Involucral bracts linear-lanceolate, acute, loose, with spreading tips. Rays white, shorter than the pappus, erect; disk corollas 4 lobed. Achene pale brown, .4 x 1.3 mm.; oblong, narrowed at the base, rounded at the summit; in section lozenge-shaped; strongly 2 ribbed, somewhat translucent between the ribs, hirsute; pappus bristles pale tawny, minutely barbellate, 3 mm. long.



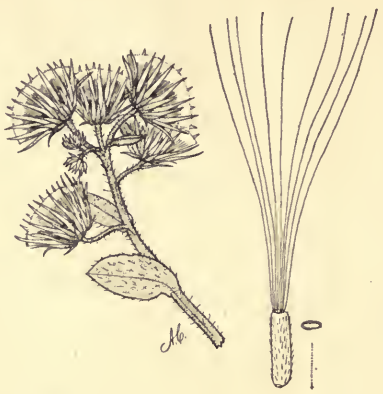
Hab.—Charcas at Celestun, May 12, 1865, *Schott 362* (*Erigeron Canadensis* L. Field Col. Mus. Bot. 1:395); Cozumel, 1885, *Gaumer* fide Oliver (*Erigeron Canadensis* L. *Ibid.* 1:52); frequent in waste places about Izamal, 3 feet high, July to Dec., *Gaumer 846, 1996* (*Erigeron Canadensis* L. *Ibid.* 1:323).

CONYZA Less. Syn. Comp., p. 203.

Heads heterogamous, discoid; several rows of marginal flowers pistillate, fertile, the corolla reduced to a filiform tube, destitute of ligule; central flowers perfect, fertile, very slender tubular. Involucre campanulate, of narrow bracts imbricated in few to several series, the outer shorter. Receptacle naked, plane or convex, faveolate. Achene laterally compressed; pappus of 1 series of capillary bristles. Herbs with rather small corymbose heads.

Conyza lyrata H. B. K. Nov. Gen. et Sp., 4:55.

An ascending or erect, branching viscous herb with subangled glandular-pilose or puberulent stem and branches and alternate, sessile, obovate, sinuate-lyrate, dentate, brown farinose leaves. Inflorescence of cymose clusters of few to many heads terminating leafy branches; branchlets and pedicels densely brown farinose and sparsely pubescent with soft spreading white hairs. Heads 6–7 mm. high, 12–14 mm. broad, many flowered. Involucral bracts loosely imbricated in 3 series, lanceolate-linear, acuminate, the outer densely brown farinose, the inner glabrous except a farinose median line, ciliate at the summit, exceeding the pappus. Marginal corollas white, central yellowish Receptacle subconvex. Achene chestnut, .2 x 1 mm., oblong, rounded at the base; in section oblong; nerveless, villous; pappus bristles 10–15, brownish white, nearly smooth 4–5 mm. long.



Hab.—"Herb, 4 feet high, common in towns, flowers white," Izamal, *Gaumer 513*, Chichankanab *1453*, Pocoboch *2406*.

BACCHARIS L. Sp. Pl., 860.

Heads diœcious, discoid, many flowered, flowers of fertile heads pistillate, of sterile heads perfect. Involucre campanulate, of many bracts imbricated in several series, outer gradually shorter. Receptacle naked, plane. Achene laterally compressed, ribbed; pappus of numerous capillary bristles. Diœcious shrubs; with small panicled or corymbose heads.

Baccharis halimifolia L. Sp. Pl., 860.

A freely branching, glabrate shrub with striate stem and angled branches, and thickish alternate, obovate to oblong leaves with cuneate base attenuate into a petiole, 3–9 toothed, those of the flowering branches lanceolate, mostly entire. Inflorescence of axillary and terminal peduncled clusters of 1–5 subsessile heads; branches and

peduncles striate, glabrous, covered with a resinous exudation. Pistillate heads 12–14 mm. high, 4–5 mm. broad. Involucral bracts imbricated in 4 series, the outer ovate to oblong, obtuse, tinged with purplish olive, more or less resinous; inner lanceolate, subacute, fimbriate, paler, much exceeded by the pappus. Corolla short, white. Achene yellw, .5 x 1.5 mm., obliquely obconoid; in section oval-oblong; strongly 10 ribbed, glabrous; pappus bristles copious, soft, silky, white, or pale pinkish tawny, smooth, 10–13 mm. long. Sterile heads similar, involucre slightly smaller, achenes abortive; pappus, barbellate, plumose at the summit, 3–5 mm. long.

Hab.—"Shrub, 6 feet high, not common at Chichankanab" *Gaumer 1376*, Pocoboch *2367*.

The species varies greatly in the shape of the leaves. Our specimens are without lower leaves; those of the inflorescence are oblanceolate, entire.

PLUCHEA Cass. Bull. Philom., 1817:31.

Heads heterogamous, discoid; outer flowers in many series, pistillate, fertile, corolla reduced to a slender tube; central flowers perfect, sterile, the corolla tubular, 5 cleft. Involucre wide campanulate, of membranaceous bracts imbricated in several series, the outer gradually shorter. Receptacle naked, plane. Achene laterally compressed, nerved; pappus of 1 series of spreading slender bristles. Herbs with dense cymes of flesh color or pale purple flowers.

Achene strongly nerved, internerves resin dotted	*camphorata*
Achene faintly nerved, internerves not resinous	*odorata*

Pluchea camphorata (L.) DC. Prod., 5:452.

Erigeron camphoratum L.

An erect, branching, heavy-scented annual, with angled stems and branches and alternate, petioled, oblong-lanceolate, acute, dentate leaves, minutely glandular-puberulent. Inflorescence a broad or flat-topped compound corymb of cymose clusters of several to many heads; branchlets and pedicels densely glandular-puberulent. Heads 6–7 mm. high, 9–10 mm. broad, many flowered. Involucral bracts in 3 series, tinged with rose purple, acuminate, the outer ovate, glandular-puberulent, ciliolate; inner lanceolate to linear-lanceolate, with a median line of glandular puberulence, ciliolate, the tips erect or spreading, as long as the pappus. Corollas rose purple. Achene purplish brown, .3 x 1 mm., oblong narrowed at the base, suboblique;

in section oblong in outline, 5 or 6 angled, the lateral facets concave; 5 or 6 nerved, hirsute on the pale nerves, resin dots between them; pappus bristles 10–15, fragile, tawny or purplish, nearly smooth, 3 mm. long.

Hab.—"Herb 6 feet high, old fields about Izamal, uncommon, October." *Gaumer 1002* (*Pluchea purpurascens* Field Col. Mus. Bot. 1:396) "abundant at Chulubmay, March," *1099*, Silam *2127*, *2412*, Chichankanab *2175*, *2453;* near the Caleta, Cozumel, *Millspaugh Pl. Utowanæ 1532*, borders of the lagoons, south of Progreso, *1714*.

Pluchea odorata (L.) Cass. Dict. Sci. Nat., 13:3.

Conyza odorata L.

An erect herb, with fruticose base, subangled, softly pubescent stem and branches and alternate, petioled, lanceolate, entire leaves, attenuate at both ends, puberulent above, paler and downy-pubescent below, odorous when crushed. Inflorescence a broad, congested, compound corymb of cymose clusters of 10–20 heads; branchlets and pedicels glandular-tomentose. Heads 6–7 mm. high, 9–10 mm. broad, many flowered. Involucral bracts in 4 series, olivaceous, the outer ovate, obtuse or subacute, glandular puberulent, ciliolate, inner linear-lanceolate, acuminate, the tips erect or spreading, slightly exceeding the pappus. Corollas pale rose color. Achene reddish chestnut, .2 x .9 mm., oblong, narrowed at the base, little oblique; in section cuneate-5-angled; faintly 5 nerved, hirsute on the nerves, glabrous between them; pappus bristles 10–15, white, minutely barbellate, 3.5–4 mm. long.

Hab. — Merida, Feb. 12, 1865, *Schott 185*, salt swamps at Sisal, Nov. 9, 1865, *915;* Island of Mugeres 1886, *Gaumer* (Oliver); streets of Izamal, Jan. 23, 1895. *Millspaugh Armour Exped. 176;* Merida, *Valdez 6;* Izamal, *Gaumer 399*, Pocoboch *1742*, *2343*, Calotmul *1743*, the Caleta, Cozumel, *Millspaugh Pl. Utowanæ*, *1503*, *1512;* Ticul, March 6, 1903, *Cæc. et Ed. Seler 3912*, and Mani March 7, *3914*.

A common shrub, flowering throughout the year, known in Yuca-

tan as "Santa Maria," and used in domestic medicine as a febrifuge as we use boneset in the north. Cultivated in the interior, called Chalchay, "Resin plant," by the Mayas and used by them with excellent success as an antiperiodic in malarial forms of fever; also as an emmenagogue.

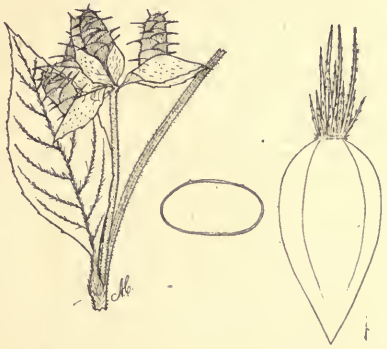
Dondé says:* "Its action upon the uterus is recognized. When for any cause menstruation is interrupted take a few of the wilted (*salcochando*) leaves at intervals during the day."

SPIRACANTHA H. B. K. Nov. Gen. et Sp., 4:22, t. 313.

Heads 1 flowered, flower perfect, fertile, tubular. Involucre narrow, of hyaline bracts in 2 series of 3 each, unequal. Receptacle naked. Achene subcompressed, faintly nerved; pappus of many stout, erect, unequal, caducous bristles. Low, fruticose; heads aggregated in spinescent glomerules.

Spiracantha cornifolia H. B. K. Nov. Gen. et Sp., 4:22, t. 313.

A low, diffusely branching, woody herb with terete, pubescent stems and branches, and alternate, short-petioled, ovate or elliptical, acute leaves, dark green and pubescent above, pale tomentose beneath. Inflorescence of terminal and axillary clusters of 2–5 spiny glomerules; the clusters on a common hirsute peduncle, .5–5 cm. long, solitary or several in the axils of the leaves. Heads 1 flowered, minute, 12 to 20 aggregated in an ovoid glomerule subtended by a wide, adnate, leaf-like, veiny bract, the heads each subtended by a broad, hirsute, coriaceous bract, bearing a squarrose spine. Involucral bracts hyaline, ciliolate at the summit, mucronate, clothed with long silky hairs at the base, 1 nerved, the outer longer. Corolla purple, 4 or 5 lobed. Receptacle minute. Achene dull brown, .9 x 2.1 mm.; obovoid, attenuate at the base, apex obtuse; in section oblongo-elliptic; obscurely 5 nerved, glabrous; pappus bristles upwardly barbed, .5–1 mm. long.



Hab.—"Herb, 12 inches high, uncommon," Yot Donot, *Gaumer 1335*.

NOCCA Cav. Icon., 3:12, t. 224.

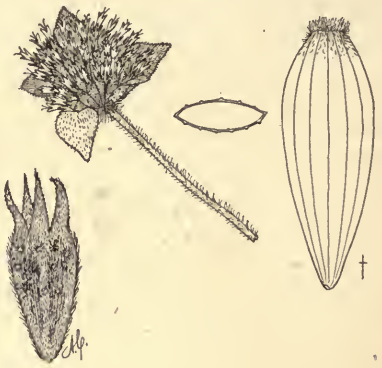
Heads 1 flowered, aggregated in dense capitate glomerules, subtended by herbaceous bracts. Involucre calyx-like, tubular, gamophyllous. Receptacle naked. Achene laterally compressed, nerved; pappus (in our species) reduced to a tuft of short hairs on the apex. Herbs or shrubs.

Ensayo Botanico, 1894: 12.

Nocca mollis (Cav.) Jacq. Frag., 58 t. 85.

Lagasca mollis Cav.

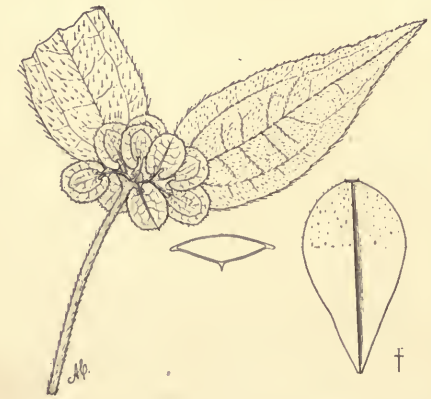
An ascending, usually diffusely branched annual, with striate softly pubescent stem and branches and opposite (or uppermost alternate) petioled, ovate, crenate-dentate, softly pubescent leaves, paler beneath. Inflorescence of terminal and axillary, solitary, long peduncled, subglobose glomerules, of 20–30 heads, subtended by 4–6 ovate, leaf-like bracts. Heads 7 mm. high, 2 mm. broad. Involucre closely investing the achene, 4–6 (usually 5) cleft, verrucose-striate, densely pubescent with white hairs, the hairs tufted on the verrucæ. Corolla white, tube short, limb elongated, lobes 5, pubescent. Achene dull black, 1.25 x 3 mm., cuneate, rounded at the summit; in section biconvex; about 12 nerved, minutely reticulated, pubescent around the apex with reflexed hairs; pappus reduced to a crown of white hairs.



Hab.—Waste lands near Merida, *Valdez 29* (*Lagascea mollis* Cav. Field Col. Mus. Bot. 1:324); common on open grounds near Izamal, July to March, *Gaumer 489, 518* (*Tithonia tubæformis Ibid.* 1:325), Chichankanab *1802;* forests of Xkombec, April 5, 1903, *Cæc. et Ed. Seler 4024.*

ELVIRA Cass. Dict. Sc. Nat., 30:67.

Heads heterogamous, in our species 2 flowered, 1 pistillate, fertile, ligulate; 1 perfect, sterile, tubular. Involucre plano-compressed, of 3 thin herbaceous bracts laid face to face. Receptacle naked, minute. Achene dorsally compressed, 4 angled; pappus none. Annual herbs with inconspicuous, fascicled heads.



Elvira biflora (L.) DC. Prod., 5:503.

Milleria biflora L.

An erect annual with angled, strigose stem and branches, and opposite, petioled, lanceolate-ovate, acuminate, serrate, 3 nerved, hirsute leaves, paler beneath. Inflorescence of terminal and axillary pedunculate fascicles of 10–12 heads, subtended by a pair of leaves. Heads 5–6 mm. high, 5 mm. broad, on slender pubescent pedicels, or subsessile, 2 flowered. Involucral bracts veiny,

subcrenate, pubescent, with short, stiff white hairs, the first cordato-orbicular, second and third smaller, cordato-ovate, opposite to and closely appressed to the first, the third folded under the second and adherent to it on one side at the base. Corollas yellowish, barely exceeding the involucre. Achene dull black, 1.4 x 2.5 mm., obovate; in section biconvex in outline; the lateral and ventral angles keeled, dorsal angle nearly obsolete, sparsely pubescent near the summit, apex minutely denticulate.

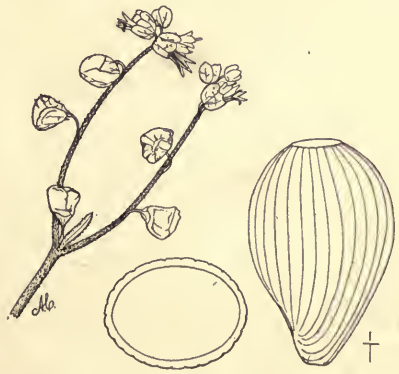
Hab.—"Herb, 3 feet high; abundant on uncultivated and waste lands near Izamal, Sept. to Feb." *Gaumer 367* (*Elvira Martyni* Cass. Field Col. Mus. Bot. 1:323) Chichankanab *1535, 1571, 1709, 1711*, San Anselmo *1710*.

MILLERIA L. Sp. Pl., 919.

Heads heterogamous, radiate, ray flower 1, pistillate, fertile, ligulate; disc flowers 2–4, perfect, sterile, tubular. Involucre oblique, depressed subglobose, thickened in fruit, firmly closed over the achene, of two outer bracts, one wide, concave, subcucullate, the opposite small, and 2 or 3 subhyaline inner ones. Receptacle naked, small. Achene slightly compressed laterally, the hilum above the base, striate, pappus none. Tall annual herbs, with inconspicuous heads.

Milleria quinqueflora L. Sp. Pl., 919.

An erect annual, with subangled stem and trichotomous branches, and large, thin, opposite, orbicular-ovate, abruptly acuminate leaves, attenuate into a winged petiole or the upper sessile, subentire, scabrate above, soft pubescent beneath. Inflorescence of terminal and axillary dichotomous racemes; rachis glandular pubescent. Heads 5–6 mm. high, 2.5–3 mm. broad on slender, spreading or drooping, glabrate or sparingly glandular-pubescent peduncles, 5 flowered, ray flower 1, pistillate, fertile, the others perfect, sterile. Involucre obliquely cup-shaped when young, much thickened in fruit, 4–5 mm. in diameter, turgid, somewhat gibbous, irregular subglobose, sparingly glandular. Ray flower yellow, ligule cuneate, 3 cleft, 5 mm. long; disk corollas green. Achene dull black, 2.5 x 4 mm., obovoid, suboblique at base; in section oval; many striate with impressed lines.



Hab.—Cercanias about Merida, Nov. 15, 1864, *Schott 90;* "herb 9 feet high, abundant in fields and vacant lots about Izamal, flowering from Oct. to Jan." *Gaumer 949*.

Called Xiutoloc, "Toloc herb," by the Mayas. The Maya To loc is an unknown species of persimmon, bearing a fruit having a crest or hood.

BALTIMORA L. Mant. Pl., 158.

Heads heterogamous, radiate; rays in 1 series, pistillate, fertile, ligulate; disk flowers, perfect, sterile, tubular. Involucre campanulate, of 2 series of imbricated bracts, rigid with herbaceous tips. Receptacle plane, chaffy; scales subtending or embracing the sterile flowers. Achenes 3 sided, thickened, rugose; pappus a small crateriform, deciduous disk. Annual herbs, heads in loose panicles.

Baltimora recta L. Mant. Pl., 288.

An erect, branching, annual, with opposite, slender petioled, ovate, acuminate, serrate, hirsute leaves. Inflorescence a loose, cymose panicle of several to many heads; branches and peduncles slender, striate, hirsute. Heads 5–6 mm. high, 12–15 mm. broad, ray flowers 5–6, disk flowers numerous. Involucral bracts subequal, appressed, ovate, acuminate, hirsute, especially toward the summit, striate. Corollas yellow, rays with short tube, ligule oval, 6 mm. long, emarginate, spreading; disk corollas campanulate, 5 lobed, the lobes hirsute within. Receptacle subconvex; scales oblong-lanceolate, acuminate, hirsute at the summit. Achene black, 2.5–2.7 x 3–3.2 mm., irregularly cuneate; in section triangular; rugose, hirsute at the summit, 3 angled, the angles corky margined, the margins produced into irregularly toothed wings above, those of the lateral angles more prominent than the ventral; pappus crateriform, .5 mm. high, the margin fimbriate-hirsute.

Hab.—"Herb, 4 feet high, common at Progreso," *Gaumer 1177*, abundant at Buena Vista Xbac, *1423;* Chichen Itza, Mch. 2, 1903, *Cæc et Ed. Seler 4001.*

Called ZALAC-KAAT by the Mayas. "Light thatch-KAAT."

MELAMPODIUM L. Sp. Pl., 921.

Heads heterogamous, radiate, rays in 1 series, pistillate, fertile, ligulate; disk flowers perfect, sterile, tubular. Involucre hemispheric, in 2 series, dimorphous, outer series of 4 or 5 broad foliaceous bracts, often connate at the base; inner hooded, completely and permanently enclosing the achene, forming a pericarp-like covering, and deciduous with it. Receptacle chaffy, convex or conical; scales subtending the sterile flowers. Achene laterally compressed, striate, hilum above the base, apex over the ventrum; pappus none. Herbs with rather showy heads of yellow flowers.

Fruit rugose in regular ridges.	*divaricatum*
Fruit rugose in irregular lines.	*gracile*

Melampodium divaricatum (Rich.) DC. Prod., 5:520.

Dysodium divaricatum Rich.

An erect, dichotomously branching annual, with angled stem and branches, pubescent in lines, and opposite, short ciliate-petioled, lanceolate or ovate, acute, sinuate-dentate, hirsute leaves. Inflorescence of solitary, long-peduncled heads, terminating the dichotomous branches, one head terminal in the fork; peduncles slender, puberulent. Heads 8–9 mm. high, 17 mm. broad, ray flowers 10–15, disk flowers numerous. Outer involucral bracts 5, imbricated, orbicular, subacute, connate at the base, ciliate; inner bracts at first, conduplicate, truncate, dentate, becoming a hard, triangular-cuneate, corky-ridged, pericarp-like covering for the achene, which is with difficulty separated from it (shown magnified 5 diameters in the figure). Corollas yellow, ligule oblong-oval, bidentate, 6–7 mm. long, spreading; disk flowers 5 lobed. Receptacle conoid, elevated, the fructiferous bracts saccate around it, below their point of attachment; scales fimbriate. Achene dull black, 1.8–2 x 3.2 mm., unsymmetrically cuneate-obovoid; in section triangular, the dorsal facet shortest; striate with impressed lines, glabrous.

Hab.—Merida, Nov. 14, 1864, *Schott 28* (*Melampodium paludosum* H. B. K. Field Col. Mus. Bot. 1:395); Cozumel 1885, 1886 *Gaumer* (Oliver) (*Eleutheranthera divaricata Ibid.* 1:53); patio, residence of Dr. Gaumer, Izamal, Jan. 13, 1895, *Millspaugh Armour Exped. 71* (*Eleutheranthera divaricata Ibid.* 1:53); Merida *Valdez 5* (*Eleutheranthera divaricata Ibid.* 1:324); "herb, 4 feet high, abundant in old fields near Izamal, Sept. to Jan.," *Gaumer 563* (*Eleutheranthera divaricata Ibid.*), *961* (*Melampodium paludosum* H. B. K. *Ibid.* 1:395), Chichankanab *1486*, *2100*, *2345*, San Anselmo *2101*, Progreso *2346*, *2347*, *2348*.

Called by the Mayas Xoy, "stye," probably from an ancient use of the plant as a refrigerant application to painful boils upon the eyelids. Cuevas, in his "Ensayo Botanico," says: "Xkantumbub, abundant throughout the peninsula, where the whole plant is used as a remedy for dysentery." This error is a common one, as many Maya-Yucatec informants do not differentiate between this plant and *Sanvitalia procumbens*, the true xkantumbub.

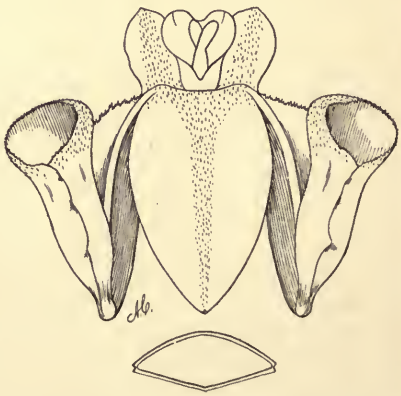
Melampodium gracile Less. Linnæa 6:407.

An erect, trichotomously branching herb, with subangled, hispid stem and branches, and opposite, partly clasping, oblong, acuminate, sinuate dentate, hispid leaves, the lower somewhat hastate-pan-

duriform, the upper lanceolate. Inflorescence of solitary, long-peduncled heads, terminating the branches, peduncles slender, hirsute. Heads 8 mm. high, 10–12 mm. broad; ray flowers 5–7 (usually but 5 perfecting fruit), disk flowers numerous. Outer involucral bracts 3–5, imbricated, ovate, acuminate, pubescent with rigid white hairs; inner bracts flattened on the back, truncate, hirsute with stiff bristle-like hairs which disappear at maturity, becoming a hard, irregularly trapezoid, warty, reticulate, and rigid, pericarp-like covering for the achene, to which it is closely adherent (shown magnified 5 diameters in the figure). Corollas yellow, ligules broadly oval, 4–5 mm. long, bifid, spreading or drooping; disk flowers 5 lobed. Receptacle conoid, elevated, the fructiferous bracts saccate around it below their point of attachment; scales fimbriate. Achene dull black, 1.5–2 x 2.1–2.5 mm., unsymmetrically obovoid; in section obovoid-cuneate, the dorsum truncate; striate with impressed lines, glabrous.

Hab.—"Herb, 4 feet high, in the forests about Izamal," *Gaumer 789* (*Melampodium hispidum* Field Col. Mus. Bot. 1:324), Progreso, *2349*.

A species variable in the shape of its leaves and in the size of the fructiferous bracts; about one-tenth of a large collection (*Gaumer 789*) having larger, more warty "pericarps" than in other specimens from Yucatan and Mexico, but otherwise these plants show no distinctions worthy of specific or varietal rank.



PARTHENIUM L. Sp. Pl., 988.

Heads heterogamous, radiate, rays in 1 series, pistillate, fertile, ligulate, the ligules short and broad; disk flowers perfect, sterile, tubular. Involucre depressed hemispheric, of herbaceous bracts imbricated in few series. Receptacle chaffy, convex or conic; scales somewhat cucullate, partly enclosing the sterile flowers. Achene dorsally compressed, with a callous margin which is firmly coherent at the base with the bases of the bracts of the contiguous pair of sterile flowers and of the subtending bract; at maturity tearing away from the achene to the shoulder, carrying the empty sterile bracts and the twice-split subtending bract on their basal extremities, forming a

somewhat parachute-like arrangement (shown magnified 15 diameters in the figure). Pappus of two chaffy scales or 2–4 inconspicuous cartilaginous awns; rays persistent on the achene. Bitter aromatic herbs or shrubs with broad panicles of inconspicuous heads of white flowers.

Pappus of 2 broad scales	*Hysterophorus*
Pappus of inconspicuous awns:	
Awns 3, divergent	*Schottii*
Awns 2, erect	*fruticosum*

Parthenium Hysterophorus L. Sp. Pl., 1402.

A diffuse, pubescent annual with striate-sulcate stem and branches, and alternate, peduncled, twice-pinnatifid, coarsely toothed leaves, those of the inflorescence linear or lanceolate, entire. Inflorescence of loose, open, cymose panicles; branches and peduncles slender, striate, hirsute. Heads 3–4 mm. high, 5–6 mm. broad; ray flowers 5, disk flowers numerous. Involucral bracts in 2 series of 5 each, subequal; outer ovate subacute, green, 3 nerved, pubescent; inner orbicular-obcordate with a thin, pubescent margin. Corollas white, rays obcordate; disk flowers narrowly campanulate, the 5-toothed apex incurved. Receptacle convex; scales broad, hyaline, tomentose at the summit, equaling the sterile flowers. Achene black, 1.2–1.4 x 2 mm., obovate; in section triangular, dorsal facet convex; pubescent toward the summit and down the ventral angle with stipular hairs; pappus of 2 broad membranaceous scales, .7 mm. high.

Hab.—Cozumel, 1885, 1886 *Gaumer* (Oliver); waste lands near Tikul, April, 1887 *Millspaugh 18;* common about Merida, *Valdez 12;* abundant near Izamal, Jan. to Dec. *Gaumer 558*, Chichankanab *1555*, *1849*, San Anselmo *1848;* Cozumel *Millspaugh Pl. Utowanæ 1572.*

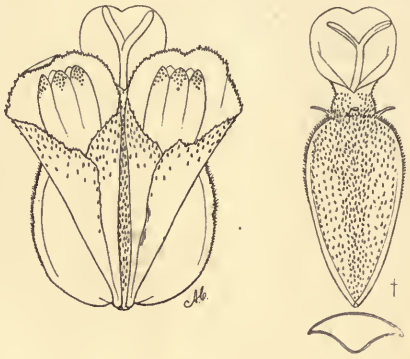
Called Altaniza in Spanish. "An infusion of the leaves and flowers is reputed as an emmenagogue." (Valdez, Cuevas.)

Parthenium Schottii Greenman Sp. Nov.

Shrub: Stems and branches smooth, covered with a grayish white bark, branchlets slightly striate, tawny pubescent; leaves alternate, lanceolate, including the petiole 5 to 10 cm. long, 1.5 to 3 cm. broad, gradually narrowed below into a winged petiole, acute or obtuse at the apex, entire or repand-dentate, hirtellous-puberulent above*, the hairs arising from a bulbous base, *finely pubescent beneath: inflorescence in terminal* and ax-

*Italics include Dr. Greenman's original description and notes as received in manuscript; additional description and notes are in body type.

illary loose cymose *corymbs:* branchlets and pedicels slender, somewhat flexuous, tomentulose: *heads 3 to 4 mm. in diameter*, 4 mm. high, 4–4.5 mm. broad; rays 5, disk flowers 10 to 15: *involucral scales about 2-seriate*, in 3–4 series of 5 each, *obtuse, the outer shorter*, puberulent, tomentose at the summit: *rays 1 mm.* to 1.5 mm. *long, subrotund, bidentate:* disk flowers narrowly campanulate, glandular dotted at the apex: receptacle conic; scales broad, emarginate, fimbriate, the summit clothed with thickened hairs: *pappus of* 3, rarely *2 slender, inconspicuous*, divergent, cartilaginous *awns*, .25–.3 mm. long, the lateral pair slender entire, the ventral one broadened, tridentate: *mature achenes* black, *oblong cuneate* or narrowly obovate, *2 mm. long*, 1.2–1.3 x 2.4 mm.; in section flattened triangular in outline, the dorsum convex, the ventral angle rounded and facets concave; *puberulent*, clothed with brownish white thickened hairs, more dense at the summit and on the ventral angle.



Collected by Dr. Arthur Schott, Labcah, Yucatan, July 30, 1865, No. 264; and by Dr. G. F. Gaumer at Merida and at Progreso, Yucatan, No. 1166.

Hab.—Labcah, July 30, 1865, *Schott 264;* "shrub 3 feet high, abundant at Progreso" *Gaumer 1166* (*type*), Calotmul *2213.*

Called SANTA MARIA in Yucatec and CHALCHA (see Pluchea odorata) by the Mayas.

Perhaps most nearly related to P. fruticosum Less., which, however, has somewhat broader leaves, much less attenuate at the base, and more hirsute above. P. Schottii is further distinguished by the looser corymbs, 3–4 seriate involucre, more conspicuous rays, longer achenes, and divergent awns, 3 in number.

Parthenium fruticosum Less. Linnæa, 5:152.

Shrubby stems and branches with pale cortex, terete, striate, subtomentose; leaves alternate, short wing-petioled, triangular to cordate, acute, dentate, scabrous above, villose-pubescent below. Inflorescence a terminal, dense, flat-topped or rounded, cymose corymb; branchlets and pedicels, stout, rigid, tomentose. Heads 4 mm. high, 5–6 mm. broad; rays 5–6, disk flowers numerous. Involucral bracts in 2 series of 5–6 each, the inner much longer; outer ovate, rounded and ciliate at the summit, pubescent; inner orbicular,

PARTHENIUM SCHOTTII.

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pubescent toward the summit, fimbriate-ciliate. Corollas white, rays bidentate; disk flowers narrowly campanulate, 5 toothed. Receptacle conic; scales obcordate, tomentose and erose at the summit. Achene black, 1.2 x 2 mm., obovate; in section triangular in outline, the dorsum convex, the ventral angle rounded and facets concave; densely clothed with brownish white, thickened hairs; pappus of 2 slender erect cartilaginous awns, .2 mm. long, hardly visible among the hairs.

Hab.—San Anselmo, *Gaumer 2115;* border of lagoon south of Progreso, March 5, 1899, *Millspaugh Pl. Utowanæ 1665.*

SANVITALIA Lam. Journ. Hist. Nat., 2:176, t. 33.

Heads heterogamous, radiate; rays pistillate, fertile, ligulate; persistent on the achene; disk flowers perfect, fertile, tubular. Involucre depressed hemispheric, of herbaceous bracts imbricated in 2–3 series. Receptacle convex to conic, chaffy; scales enfolding the disk flowers, persistent on the receptacle. Achenes heteromorphous, ray achenes triangular, dorsally compressed, 3 awned; disk achenes laterally compressed, winged or wingless, 2 awned or awnless. Annual herbs with rather showy heads of yellow rays and dark purple disks.

Sanvitalia procumbens Lam. Journ. Hist. Nat., 2:176, t. 33.

A diffuse, procumbent annual, with subangled stem and branches, and opposite, petioled, lanceolate-ovate, strigose leaves. Inflorescence of solitary heads terminating the slender, hirsute branches. Heads 7–8 mm. high, 12–15 mm. broad, subtended by 2–3 foliaceous, hirsute bracts; rays 8, disk flowers numerous. Involucral bracts orbicular, appressed, with foliaceous spreading ciliate tips, pubescent, the inner little exceeding the outer. Rays yellow, turning white in fruit, ovate, 5–6 mm. long, minutely bidentate; disk corollas dark purple, 5 lobed. Receptacle convex to conic; scales lanceolate, conduplicate, exceeding and partly enfolding the disk flowers. Achene of ray flowers cineraceous black when mature, 1.2 x 3 mm., oblong cuneate; in section triangular; tuberculate, hirsute at the base, awns 3, divergent, 2 mm. long; achenes of disk flowers dull brown, .85 x 2 mm., obovoid, in section plano-convex to rhomboidal biconvex; with one or a pair of loosely cellular, ciliate-fimbriate wings, 5–7 mm. wide, or wingless; the winged with 1 or 2 awns, 1–2 mm. long or awnless, faintly tuberculate; the wingless achenes awnless and covered with tubercles each tipped by a short stiff hair or its stub.

Hab.—Merida, Nov. 29, 1864, *Schott 14;* "abundant in waste places about Merida, *Valdez 63;* "herb 18 inches, common at Cacalchen and Euan, June to March," *Gaumer 964*, San Anselmo *2103*, Chichankanab *2104*, *2352*.

Called XKANTUMBUB, "Yellow TUMBUB," by the Mayas, and "SANGUINARIA DE FLORES NEGROS" in Spanish; used by the Mestizas as a remedy for the vomiting or spitting of blood, also as a pectoral. The sprouts, leaves, and flowers in decoction are employed as a remedy for bloody dysentery. Cuevas remarks:* "It is indicated in dysentery, in which an infusion of the whole plant should be taken, with sugar, at intervals during the day." Dondé says:† "Abundant from July to March in the suburbs of Merida, principally, however, at San Sebastian, the plaza of which is carpeted over its larger part with this useful plant. Of all the plants of Yucatan this is without doubt the one most generally employed in domestic medicine at every point on the peninsula. Its great reputation as a remedy for the spitting or the vomiting of blood, and for strengthening the organs of respiration, is attested by innumerable laymen and the extended observations of the faculty of medicine. It is also used as a remedy for bloody dysentery."

The achenes figured are taken from the same head (*Gaumer 2104*); the most compressed are from the center of the disk, the awnless and wingless from the margin, next to the ray flowers.

ECLIPTA L. Mant. Pl., 2:157.

Heads heterogamous, radiate; rays pistillate, perfect, ligulate; disk flowers perfect, mostly fertile, tubular. Involucre hemispheric of herbaceous, subequal bracts imbricated in 2 series. Receptacle plane or convex, chaffy; scales small, awn-like. Achenes laterally compressed, ray achenes 3 sided, disk achenes 4 sided; pappus none, or a few short teeth. Weedy herbs with inconspicuous heads.

Eclipta alba (L.) Hassk. Pl. Jav. Rar., 525.

Verbesina alba L.

A coarse annual, erect or procumbent, with subangled, strigose stem and branches, and opposite, lanceolate, sinuate-dentate, acute, strigose-hispid leaves, narrowed into a short petiole. Inflorescence of solitary, peduncled, terminal and axillary heads; peduncles slender, strigose pubescent. Heads 5 mm. high, 7–9 mm. broad, ray and disk flowers numerous. Involucral bracts broadly ovate, acuminate, appressed or the tips spreading, pubescent, equal or the outer slightly

Ensayo Botanico 1894 : 36.

†*Apuntes sobre las Plantas de Yucatan* 1874 : 146.

longer. Corollas whitish, ligules erect or little spreading, narrow, 2 mm. long. Receptacle slightly convex; scales linear, upwardly barbed, little shorter than the disk flowers. Achene brown, 1.1 x 2–2.2 mm. cuneate; in section lozenge-shaped; corky tuberculate rugose; pappus of 2 erect teeth, .1–.2 mm. often broken away from the mature achene.

Hab.—"Herb 6 feet high, common in old fields near Izamal, June," *Gaumer 730* (*Eclipta erecta* L. Field Col. Mus. Bot. 1:323), "in shady places 10 inches high, Izamal," *1012*, Progreso *1162*, San Anselmo *1203*, Chichankanab *1340*, *2245*, *2506*.

SCLEROCARPUS Jacq. Ic. Pl. Rar., t. 176.

Heads heterogamous, radiate, rays neutral, ligulate; disk perfect, fertile, or innermost sterile, tubular. Involucre campanulate of few herbaceous bracts. Receptacle convex or conic, chaffy; the scales coriaceous or cartilaginous, closely investing the achene forming a pericarp-like covering, and deciduous with it. Achene subcompressed laterally, obovoid, the hilum above the base; pappus none in our species. Herbs with showy heads of yellow flowers.

Sclerocarpus divaricatus Benth. and Hook f. in Biol. Cent. Am. Bot., 2:164.

Gymnopsis divaricata Benth.

An erect, branching herb, with subangled, pubescent stem and branches and alternate, petioled, ovate, or lanceolate, acute, coarsely dentate, strigose-hispid leaves. Inflorescence of solitary, long-peduncled heads, terminal and axillary; peduncles slender, clavate above, striate, densely pubescent. Heads 1.5–2 cm. high, 3–4 cm. broad; ray flowers 5 or 6, disk flowers numerous. Involucral bracts 5 or 6 in 1 series, oblong-ovate, subacute, canescent. Corollas yellow, ray with very slender tube, ligule orbicular, 3 dentate, 10–12 mm. long, spreading; disk corollas hirsute, blackish in the throat, 5 cleft. Receptacle conoid; fructiferous scales at maturity 2.5–2.7 x 3–3.5 mm., rhombic obovoid, covered with corky protuberances, sparsely hirsute except at the base (shown magnified 8 diameters in the figure). Achene greenish black, 2.2 x 3.4 mm., rounded gourd shape, with mammillate apex; in section elliptical; faintly striate, glabrous, hilum above the base; pappus none.

Hab.—Labcah, July 30, 1865, *Schott 67;* "herb 3 feet high, abundant in old fields near Izamal from July to January," *Gaumer 410*, *771*,

Chichankanab *1498*, *1753*, *1950*, Temax *2503;* Itzimná, near Merida, Mch. 14, *Cæc. et Ed. Seler 3939*.

Called by the Mayas XIUHULUB. "A stem upon which fish are strung."

MONTANOA Llav. & Lex. Nov. Veg. Desc., 2:11.

Heads heterogamous, radiate, rays neutral; disk flowers perfect, fertile, tubular. Involucre in our species depressed hemispheric, of herbaceous bracts imbricated in 1 series. Receptacle conic, chaffy, the scales keeled, enlarging and becoming papery in fruit, enfolding the achene and deciduous with it. Achene laterally compressed, hard; pappus none. Pithy stemmed shrubs with showy white or purplish corymbose heads.

Montanoa Schottii Robinson & Greenman Proc. Am. Acad., 35:518.

A climbing or reclinate shrub with slender terete stem, *similar* in habit* [to Montanoa pauciflora Klatt]: *leaves* opposite, *ovate* usually from a broad base, the upper *unlobed*, the lower usually palmately 3 lobed, *unappendaged*, *serrate*, *decidedly scabrous above* with stiff white hairs arising from a tumid, impressed base, *sordid tomentulose beneath*, *9* (6–11) *cm.* long: inflorescence of few-flowered terminal and axillary cymes; branches divaricate, striate, tomentulose; peduncles slender, flexuous, becoming hooked or curved and rigid in fruit, tomentulose: *heads decidedly larger than in the preceding species* [M. pauciflora Klatt], 4.5–5 cm. across, disk 6–7 mm. high, 7–8 mm. broad; ray flowers 8–10, disk flowers numerous: *involucral scales* 5–8, *linear* or oblong-lanceolate, *acute* 7–10 *mm. long*, *pubescent: ligules about 10*, white, spreading, oblanceolate tapering to the base, 3 notched, emarginate or entire at the subacute apex, *2.2* (2–2.5) *cm. long*, faintly veined, glandular dotted beneath; corolla of disk flowers pubescent; receptacle conic; scales at first acuminate, villous above, ciliate, becoming in fruit keeled, closely conduplicate, broadly cuneate, 10–11 mm. long, 10 mm. wide (when opened) the wings after anthesis lengthening beyond the acumination which remains as an erect, spinescent tip; the wings veiny, 2–3 lobed, crenate, glabrate or with a few weak hairs at the summit; deciduous with the enclosed achene (shown magnified 2½ diameters in the figure), the mature scales papery, squarrose, forming a subglobose head 2–2.5 cm. in diameter;

*Original description in italics; additional description and notes are in body type.

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achene dark brown, 1.4 x 3 mm., cuneate, apex truncate, base acute; in section rhomboid-lozenge shaped, the angles rounded; glabrous.

Yucatan, on a road between Merida and Sisal, Dr. Arthur Schott, October 24, 1865, No. 913. Type in herb. Field Columbian Museum No. 40646.

Hab.—Road between Merida and Sisal, Oct. 24, 1865 *Schott 913;* "4 to 9 feet high, flowers pure white, clearing north of Mascab Pixoy, January," *Millspaugh Armour Exped. 155* (*Montanoa hibiscifolia* Field Col. Mus. Bot. 1:324); "climbing shrub, 20 feet high, on artificial mound 8 miles southwest of Izamal, October; flowers pure white, very showy," *Gaumer 970*, Chichankanab *1479*, Temax *2107*, *2357*, Pocoboch, Field Col. Mus. Cat. No. *58017*, Calotmul *2108*, *2358*, *2359*.

Called by the Mayas Homahak, "Trumpet vine," in reference to the fruiting peduncles. This plant evidently disperses its seed from the greatest height possible. The fruiting heads by their hooked peduncles fasten themselves upon the neighboring trees or shrubs, and from this height the achenes, free within the folded papery scales which break away from the receptacle, are carried by the wind.

ISOCARPHA R. Br. Trans. Linn. Soc., 12:110.

Heads homogamous, discoid (rays wanting); flowers perfect, fertile, tubular. Involucre turbinate, of dry, chaffy bracts similar to the scales of the receptacle, imbricated in 2–3 series. Receptacle cylindrical, chaffy, loosely enfolding the flowers and achenes, persistent on the receptacle. Achene dorsally compressed, 4–6 angled; pappus none. Herbs with small heads of whitish flowers, solitary or glomerate at the end of a naked peduncle.

Isocarpha oppositifolia (L.) R. Br. Trans. Linn. Soc., 12:110.

Calea oppositifolia L.

An erect, divaricately branching, pubescent herb, stem and branches terete, striate; leaves opposite, lanceolate, acute, subentire, narrowed into a short petiole. Inflorescence of long-peduncled clusters of 1–6 (usually 3) heads, terminal and axillary; peduncles divaricate, rigid, striate, pubescent. Heads 8–10 mm. high, 5–6 mm. broad, many flowered, subsessile. Involucral bracts, linear lanceolate, acuminate, appressed, strongly 2 nerved, pubescent and granular, the outer little shorter. Corolla white, 5 lobed. Receptacle cylindrical scales like the involucral bracts, more abruptly acuminate; at first appressed, somewhat spreading at maturity and unfolding leaving the ripe achene free. Achene black, .5–.6 x 1.6 mm., obovate cuneate, 4–6 angled (usually 5); in section compressed 4–6 angled, the angles sharp, the facets concave; glabrous.

Hab.—Tizimin, March 28, 1866. *Schott sine num.*; "herb 5 feet high among the shrubbery of the brushlands and forests near Izamal, Oct. to Jan." *Gaumer 976, 2507*, March 11, 1903, *Cæc. et Ed. Seler 3920;* Chichankanab *Gaumer 1425, 2090, 2113*, Calotmul *2110, 2399*, San Anselmo *2114*, Pocoboch *2388, 2400;* woodlands about Chichen Itza, *Millspaugh Pl. Utowanæ 1635* (*Ageratum paleaceum?* Field Col. Mus. Bot. 2:106).

Called by the Mayas CHABANKAN, "A plant upon which ants collect in great numbers."

BORRICHIA Adans. Fam., 2:130.

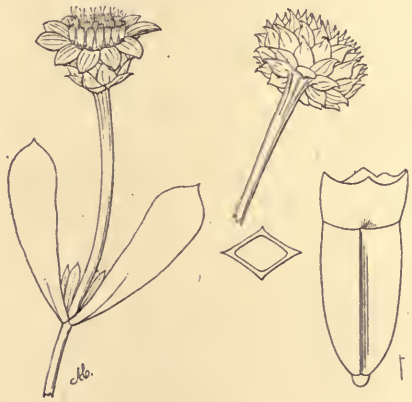
Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre hemispheric of somewhat fleshy bracts imbricated in 3 series. Receptacle plane or convex, chaffy; scales, concave, rigid, loosely embracing the achenes and deciduous with them. Achene acutely 4 angled or in the rays 3 angled; pappus a thick, toothed crown. Rather fleshy, usually silvery canescent, sea-coast shrubs.

Achene 2.8 mm., obovoid-oblong	*argentea*
Achene 3.6-4 mm., oblong	*arborescens*

Borrichia argentea (H. B. K.) DC. Prod., 5:489.

Diomedea argentea H. B. K.

A low shrub with pale stem and slender branches and opposite, sessile, linear-oblanceolate, mucronate, canescent or glabrate leaves. Inflorescence of solitary, peduncled heads, terminal and axillary; peduncles stout, rigid, striate, silvery canescent. Heads 8–9 mm. high, 15 mm. broad; ray flowers 12–15, disk flowers numerous. Involucral bracts shorter than the disk, ovate, abruptly acuminate, with spreading, mucronate tips, the outer shorter, silvery canescent, the inner ciliolate. Corollas yellow, ray with a short tube, ligule oval, 5 mm. long, minutely tridentate, spreading; disk corollas cylindrical, 5 lobed. Receptacle flat or slightly convex; scales obovate, spinose tipped, indurated at maturity, falling from the receptacle lightly clasping the achene. Achene black, 1.3 x 2.8 mm., obovoid-oblong, abruptly tapering at the base; in section lozenge shaped, the angles acute, the facets plane or little concave; glabrous; pappus a thickened 4-toothed crown, .8–.9 mm. high.



Hab.—"Shrub, 2 feet high, abundant on the coast. Progreso," *Gaumer 1161*, Chichankanab *2209*.

No. *2209 Gaumer* shows two leaves toothed at the base as in Borrichia frutescens (L.) DC., and in general our specimens show B.

argentea to have a closer relationship to this species than to B. arborescens (L.) DC.

Borrichia arborescens (L.) DC. Prod., 5:489.

Buphthalmum arborescens L.

A whitish shrub with numerous short branches and opposite, fleshy, oblanceolate, mucronate, white canescent or glabrate leaves, tapering into a semi-clasping base. Inflorescence of solitary heads terminating the numerous branches, peduncles stout, rigid, striate, silvery canescent. Heads 12–15 mm. high, 22–23 mm. broad, ray flowers 15–20, disk flowers numerous. Involucral bracts longer than the disk, fleshy, subequal, appressed, the outer oblong-panduriform acute, mucronate, canescent; the inner oblong-ovate, subacute or obtuse, membranaceous at the summit. Corollas yellow, ray with tube ½ the length of the ligule, ligule oval 6–8 mm. long, acute, entire, ascending; disk corollas cylindrical, 5 lobed. Receptacle flat; scales oblanceolate, acute, membranaceous, falling from the receptacle lightly clasping the achene. Achene black, 1.2 x 3.6–4 mm., oblong, narrowed at the base; in section lozenge shaped, the angles keeled, the facets plane; glabrous; pappus a thickened 4-toothed crown, 1.3–1.5 mm. high.

Hab. — Seashore, Cozumel 1885, and Islands of Mugeres and Holbox 1886, *Gaumer* (Oliver); coral rocks east shore of Cozumel, *Millspaugh Pl. Utowanæ 1586* (*Borrichia argentea* Field Col. Mus. Bot. 2:107) this specimen being the host of the type of Sorosporium Borrichiæ E. & E. *Ibid.* 2:16.

This, the only specimen of Borrichia arborescens we have from Yucatan, is the canescent form; but that this canescence has no specific value is shown by specimens from Grand Cayman, *Millspaugh Pl. Utowanæ 1247* (Field Col. Mus. Cat. No. 61247) and St. Croix, *Ricksecker 24* (Field Col. Mus. Cat. No. 70324), which have both canescent and glabrate leaves on the same branches. While the leaves of the canescent form of B. arborescens resemble those of B. argentea, the larger heads with appressed involucre exceeding the disk easily distinguish it from that species.

TITHONIA Desf. Ann. Mus. Par., 1:46, t. 4.

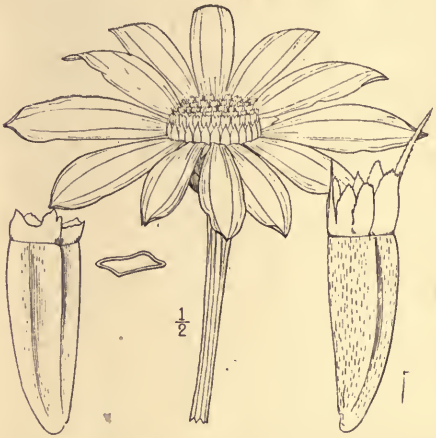
Heads heterogamous, radiate; ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre hemispheric, of rigid, appressed, striate bracts, with loose, foliaceous tips, imbricated in 2–3 series. Receptacle convex, chaffy; scales complicate, embracing the achenes, persistent on the receptacle. Achene laterally compressed,

4 angled; pappus of 2 chaffy awns one each to the dorsal and ventral angles, and several intermediate scales, persistent or deciduous, or pappus nearly obsolete. Robust annuals with large showy heads of yellow flowers.

Pappus persistent	*diversifolia*
Pappus deciduous	*tagetiflora*

Tithonia diversifolia (Hemsl.) A. Gray Proc. Am. Acad., 19:5.
Mirasolia diversifolia Hemsley.

An erect, branching, annual with alternate wing-petioled, ample, acutely 3–5 lobed, serrate, scabrous leaves. Inflorescence of solitary, terminal and axillary heads; peduncles clavate, fistular toward the summit, striate, glabrous. Heads 15 mm. high, disk 25 mm. broad; ray flowers 10–15, disk flowers numerous. Involucral bracts in 2-3 series, glabrous, the outer shorter, ovate-orbicular, obtuse; inner oblong, obtuse or subacute. Corollas yellow, ray with very short tube, ligule elliptic, 3.5–4.5 cm. long, minutely bidentate, spreading; disk corollas dilated and pubescent below, 5 lobed. Receptacle convex; scales narrowly oblanceolate, 3–5 dentate, acuminate, nearly as long as the disk flowers, clasping the achene. Achenes slatey fuscous, 1.8 x 5–5.2 mm., cuneate, slightly oblique; in section unequally rhombic, the angles rounded and facets concave; appressed-hirsute or nearly glabrous when mature; pappus persistent, of 2 flat denticulate awns 2–4 mm. long, and 6 intermediate, fimbriate, chaffy scales, 1.5–2 mm. long, or awns wanting and scales reduced forming a crown.

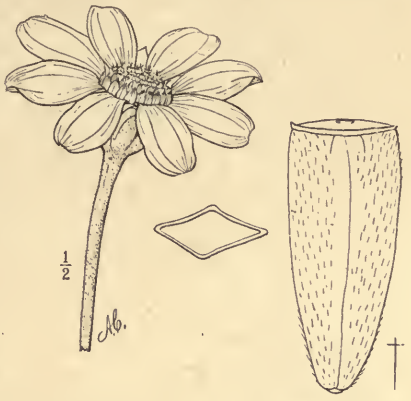


Hab.—"Herb 15 feet high, quite shrubby, cultivated at Izamal, where it blooms in November," *Gaumer 944*, San Anselmo *2078*; cultivated in Ocitas March 17, 1903, *Cæc. et Ed. Seler 3970*.

Tithonia tagetiflora Desf. Ann. Mus. Par., 1:46, t. 4.

An erect, branching annual, with alternate, wing-petioled, ovate or broad, 3-lobed, acuminate, serrate, hispidulous-puberulent leaves. Inflorescence of solitary, terminal and axillary heads, peduncles clavate, fistular at the summit, striate, densely villous. Heads 1.2–1.5 mm. high, disk 1.8–2.2 mm. broad, ray flowers usually 8, disk flowers numerous. Involucral bracts in 2 series, the outer longer, ovate-lanceolate, long acuminate, sericeous-villous; the inner ovate, acuminate, less villous. Corollas yellow, ray with very short tube, ligule oblong-oval, 2–2.5 cm. long, minutely tridentate or entire, spreading; disk corollas dilated and villous at the base, 5 lobed. Receptacle convex;

scales obovate, entire or notched at the summit, aristate pointed, nearly as long as the disk flowers. Achene grayish black, 2.7–2.8 x 6–7 mm.; oblong-cuneate; in section rhombic (or in the outer achenes 3 angled), the angles rounded and facets slightly concave; sparsely appressed-pilose; pappus of 2 slender denticulate awns or their rudiments, intermediate scales (in our specimens) very short or obsolete, caducous.



Hab.—Merida, Dec. 3, 1864, *Schott 68;* wild and cultivated near Izamal, *Valdez 93* (*Tithonia diversifolia* Field Col. Mus. Bot. 1:325); "herb 10 feet high, abundant in old fields, producing its orange-yellow flowers from Aug. to Sept.," Izamal, *Gaumer 899*, shore of the lake, Chichankanab, *1537*, *1556*, *2029*, Pocoboch, Field Col. Mus. Cat. No. 57855.

Called by the Mayas Tzum, from a supposed resemblance of the flower to the beard of the wild turkey. Termed Chioplé by the Yucatecans, who often add the cured leaves to their tobacco as an aromatic. Macerated in alcohol the leaves are also used as an application to the seat of pain in rheumatism, while in doses of a few drops the tincture thus formed is much used as a tonic in various forms of stomach disorder.

All our Yucatan specimens have achenes devoid of pappus bristles or scales at maturity; they also differ from the typical form in having larger leaves and broader ligules. While absence of pappus makes these plants disagree with the descriptions of Tithonia tagetiflora, and even with the generic description of Tithonia, it does not seem wise to establish a species or even a variety on so variable a character as the pappus proves to be in this genus where it is often of 2 or 3 forms in a single head.

VIGUIERA H. B. K. Nov. Gen. et Sp., 4:224 t. 379.

Heads heterogamous, radiate, ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre depressed hemispheric of dry bracts with herbaceous tips imbricated in few to several series. Receptacle convex or conic, chaffy; scales convex or conduplicate, embracing the achenes, persistent on the receptacle. Achene laterally compressed, more or less pilose; pappus of 2 chaffy awns, one each to the dorsal and ventral angles, and several intermediate, free or connate, truncate scales, persistent or deciduous. Herbs with medium sized heads of yellow flowers.

Viguiera helianthoides H. B. K. Nov. Gen. et Sp., 4: 226, t. 379.

A branching herb, with glabrate, striate, stem and branches, and opposite and alternate, villose-petioled, lanceolate-ovate, acute or

acuminate, 3 nerved, entire leaves, hispid above, appressed pilose or silky canescent beneath. Inflorescence an open, leafy, corymbose panicle of several to many heads; branches sometimes sparingly pubescent, peduncles pubescent at least toward the summit. Heads 7–8 mm. high, 2–2.5 cm. broad, ray flowers 8–10, disk flowers numerous. Involucral bracts in 2–3 series, subequal, lanceolate, abruptly narrowed into a linear, spreading tip, hirsute, especially on the margins and tips. Corollas yellow, ray with a short tube, ligule elliptic, 6–8 mm. long, minutely bidentate, spreading; disk corollas densely hirsute, 5 lobed. Receptacle convex, becoming obtuse conoid; scales oblong-ovate, with rigid, acute tips, nearly as long as the disk flowers. Achene black, 1.4 x 3 mm. cuneate; in section biconvex, the angles acute; densely covered with tawny, stiff, appressed hairs; pappus awns 2.2–3 mm., denticulate, the intermediate scales 1.2 mm., usually connate, laciniate, tawny, marked with dark purple.

Hab.—Suburbs of Merida, Jan. 14, 1865, *Schott 190;* Cozumel 1886, *Gaumer* (Oliver); abundant near Merida, *Valdez 71;* "herb 2 to 5 feet high, very abundant in old fields about Izamal and Xcholac, Oct. to May," *Gaumer 502, 557,* Chichankanab *1814,* Calotmul *1815;* Ticul, Feb. 18, 1903; *Cæc. et. Ed. Seler 3863,* Chichen Itzá, Mch. 21, 1903, *4003.*

Yucatan specimens vary from the typical form in having smaller heads, narrower tipped involucral bracts; achenes more densely pilose and intermediate scales of the pappus nearly always completely connate. The under surface of the leaves is more softly canescent than usual in other specimens.

Called TAH, "Torch brush," by the Mayas and used by them as a pectoral in chronic coughs.

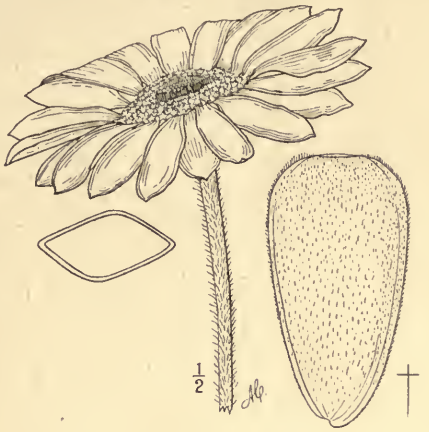
HELIANTHUS L. Sp. Pl., 904.

Heads heterogamous, radiate, ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre depressed, of herbaceous bracts imbricated in several series. Receptacle plane or convex, chaffy; scales subtending the perfect flowers. Achenes laterally compressed; pappus of 2 deciduous scales or awns. Annual or perennial herbs with large showy heads of yellow rays and (in our species) purple disk.

Helianthus annuus L. Sp. Pl., 904.

A robust annual, branched above, with stout, hispid stem and alternate (except the lowest), petioled, ovate, acute, dentate, 3 nerved leaves; rough-hispid on both sides. Inflorescence of solitary heads

on stout, rough peduncles, subcernuous. Heads 2 cm. high, 10–15 cm. or more broad; ray flowers 20–30, disk flowers numerous. Involucral bracts subequal in 3–4 series, ovate, long-acuminate, hispid-ciliate, loose and spreading. Rays yellow, tube very short, ligule elliptic, 3–6 cm. long, entire, spreading; disk corollas dilated and hirsute below, limb brownish purple, 5 lobed. Receptacle convex, depressed in the center; scales dark purple, keeled, acuminate, 3 dentate. Achenes slate color, 4–5 x 8–10 mm., obovate-oblong; in section rhombic; appressed villous, more dense at the summit; pappus of 2 purple, denticulate, chaffy scales, caducous.



Hab.—Campo, suburbs of Uman, escaped from cultivation, April, 1887, *Millspaugh 32.*

Called Girasol, Flor de Sol, Helianto, and Mirasol, by the Yucatecans.

AMELLUS P. Br. Jam. Pl., 317 excl. syn. *non* Linn.

Heads (in our species) homogamous, discoid, flowers perfect, fertile, tubular. Involucre depressed hemispheric of subequal herbaceous bracts, imbricated in 2–3 series. Receptacle convex or conoid, chaffy; scales concave, enfolding or subtending the disk flowers, persistent on the receptacle. Achene laterally compressed, 4 angled, hard; pappus of 2–8 distinct, setiform caducous bristles. Herbs with inconspicuous heads of white flowers; anthers black.

Amellus niveus (L.) Ktz. Rev. Gen. Pl., 1:306.

Bidens nivea L.

A perennial herb with 4-angled, scabrous stem and branches, and opposite, petioled, ovate-lanceolate usually hastately lobed, serrate, hispid leaves. Inflorescence of solitary, long-peduncled, terminal and axillary heads; peduncles slender, compressed, hispid. Heads 7–10 mm. high, 12–15 mm. broad, many flowered. Involucral bracts appressed, ovate, the outer subacute, inner abruptly acuminate, clothed with stiff white hairs arising from a swollen base. Corolla white, limb cylindrical, elongated 5

lobed. Receptacle convex, becoming conoid; scales oblanceolate, abruptly acuminate, rigid, striate, hispid on the mid-nerve and at the summit. Achene mottled light and dark brown, 1.5 x 3 mm., cuneate; in section lozenge-shape; the truncate summit densely pubescent and bordered by a minute, fimbriate margin; pappus bristles 2–4, .5–2 mm. long, always fallen from the mature achene.

Hab.—Merida, May 30, 1865, *Schott 164* (*Melanthera hastata* Michx. Field Col. Mus. Bot. 1:395); on the beach near the Lagoona Colombia, Cozumel, Jan. 7, 1895, *Millspaugh Armour Exped. 51*, scrub lands about Izamal, Jan. *175* (*Amellus aspera Ibid.* 1:323); sunny hills, March 11, 1903, *Cæc. et Ed. Seler 3928;* Cozumel, 1885, 1886; *Gaumer* (Oliver *Amellus aspera Ibid.* 1:52); "herb, 6 feet high, abundant in old fields, July to March, Izamal, *Gaumer 404*, Chichankanab *1492*, *1747*, San Anselmo *1748;* "open dry ground, center of the Island of Cozumel," *Millspaugh Pl. Utowanæ 1545*, old fields near Progreso, *1723.*

SPILANTHES Jacq. Enun. Pl. Carib., 8.

Heads heterogamous, radiate; rays pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular (or homogamous, rays wanting). Involucre wide campanulate, of subequal bracts imbricated in 2 series. Receptacle convex or elongated, chaffy; scales complicate, loosely enfolding the achenes and deciduous with them. Achenes of ray flowers dorsally compressed, 3 angled, of disk flowers laterally compressed; angles ciliate; pappus of 2 or 3 slender awns or bristles or none. Annual herbs with small heads of yellow flowers.

Achene ciliate on the angles	*filipes*
hyaline ciliate on the angles	*uliginosa*

Spilanthes uligniosa Swartz, Prod., 110.

A branching perennial with short petioled, oval-oblong, scabrous leaves and solitary heads on slender, sparsely pubescent peduncles, 4–7 cm. long. Heads in our specimens 4 mm. high, 5 mm. broad; rays 5–6, disk flowers numerous. Involucre turbinate, bracts imbricated in 2 series subequal, appressed, ovate, acute, sparsely glandular-pubescent. Rays 2 mm. long, spreading, orange yellow, broadly oblong, 2–3 dentate or subentire; disk flowers orange. Receptacle awl-shaped; scales 2.7 mm. conduplicate and keeled below, plane at the summit, obtuse, orange tipped, pubescent above, loosely clasping the achene and falling with it. Achene black, .7 x 1.3 mm., obovate-oblong; in section unsymmetrically biconvex, the angles prominent; angles with a pale cartilaginous border which dissolves into stiff hairs forming a ciliate margin, a tuft of similar hairs on the sides near the

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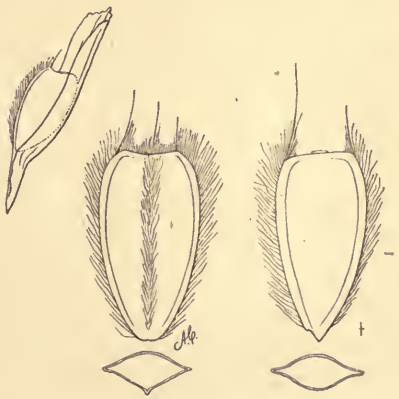
summit, achene otherwise glabrous pappus of 2 slender awns, the ventral .4–.5 mm. long, the dorsal often obscured among the marginal hairs.

Hab.—Roadside in woods, between Oitás and Pisté, March 3, 1903, *Cæc. et Ed. Seler, 3976*, depauperate specimens.

Spilanthes filipes Greenman Proc. Am. Acad., 35:314.

Herbaceous: stems erect* or rarely repent at the base, *freely branching from the base, 3 to 4 dm. high, rather sparsely pubescent with jointed hairs*, striate: *leaves opposite, petiolate, 3 nerved from near the base, ovate to oblong lanceolate, including the petiole 2.5 to 6 cm. long, .8–2 cm. broad, obtusish, submucronate, crenate-dentate, narrowed rather abruptly, or even attenuate at the base into a ciliated petiole, glabrous or with a few scattered hairs on the upper surface and on the midrib and lateral nerves beneath; heads radiate, 4 to 5 mm. high* (elongating at maturity to 6 or 7 mm.), *nearly or quite as broad, borne on long slender* (5 to 10 cm. long) *peduncles which either terminate the stems and branches or spring from the upper axils; involucral scales oblong-ovate, 2 to 2.5 mm. long, slightly acuminate, acute, inconspicuously ciliate; ligules about 5*, yellow, *including the tubular portion 4 mm. in length*, 3-dentate; *achenes of ray flowers triangular; flowers of the disk 2.5 mm. long*, corollas 5 lobed; *achenes* black and shining, *laterally compressed bearing two minute* very slender *pappus awns*, .2–.6 mm. long, achene *ciliated* on the angles, *glabrous or nearly so on each face, at maturity about 1 mm. in length* (.6–7 x 1.2 mm.); in section biconvex with keeled angles, achenes of ray flowers 3 keeled; receptacle cylindrical, elongated; *palea rounded or subtruncate*, usually dentate, *at the apex.*



Collected by Dr. G. F. Gaumer in Yucatan, 1896, No. 1122. In general appearance S. filipes most resemble S. ramosa Hemsl., but it differs materially by having much larger leaves, smaller heads and stricter habit.

Hab.—Moist soil of pathway to Cedral, Cozumel, Jan. 5, 1895, *Millspaugh Armour Exped. 43* (*Spilanthes Beccabunga* Field Col. Mus. Bot. 1:53); "Herb, 2 feet high, common in the forests of Buena Vista Xbac, August" *Gaumer 1122* (type), Chichankanab *1257, 1465, 2185*, Izamal *2502;* open grassy places near San Miguel, Cozumel *Millspaugh Pl. Utowanæ 1494* (*Spilanthes Beccabunga Ibid.* 2:108); Gaumer (1896) in Hb. U. S. Natl. Mus.

The two specimens from the island of Cozumel, *Millspaugh Armour Exped. 43* and *Millspaugh Pl. Utowanæ 1494*, show decumbent bases, but otherwise no distinction from the erect forms.

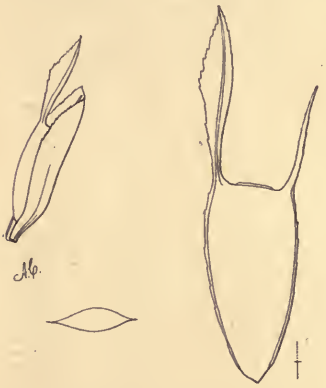
*Dr. Greenman's original description and notes are given in italics, additional description and notes in body type.

SALMEA DC. Cat. Hort. Monsp., 140.

Heads homogamous, discoid; flowers perfect, fertile, tubular. Involucre short campanulate of subherbaceous bracts, imbricated in few series, outer shorter. Receptacle convex, conic or elongated, chaffy; scales complicate, enfolding the achenes and falling with them. Achene laterally compressed; pappus of 2 unequal awns, continuous with the margins of the achene. Erect or reclining shrubs with small corymbose panicled heads.

Salmea Gaumeri Greenman sp. nov.

*Shrub:** *Stems striate, hirsute-pubescent above, the older stems covered with a grayish white bark, and rather numerously dotted with lenticels; leaves opposite, petiolate; petioles 1 cm. or less in length, hirsute-hispid; the blade oblong-ovate, 5 to 7 cm. long, 3 to 4 cm. broad, subcordate to rounded at the base, obtuse or rounded at the apex,* often mucronulate, *tuberculate or hispid on the upper surface, grayish* or brownish *tomentose beneath, the midrib above subappressed hirsute: inflorescence in a terminal* cymose *panicle: heads sessile* or nearly so, *small,* 7 mm. high, *5 mm.* or less *in diameter, about 15 flowered; involucre 2–3 seriate; scales oblong, obtuse, pubescent; corolla erect;* receptacle convex, scales subacute, erose-denticulate at the summit: *achenes* (none mature in our specimens), brown, cuneate, apex obliquely truncate, 1 x 2.5 mm., *glabrous or nearly so; pappus unequal* 1–2.5 mm., long, *the outer* (longer) *awn bearing a wing* narrowly *continuous on the achene.*



Collected by G. F. Gaumer, M.D., in forests 8 miles south of Izamal, Yucatan, October, 1895, No. 977. Type specimens in Field Columbian Museum, Chicago, Ill., and in the Gray Herbarium, Cambridge.

This species with Salmea curviflora R. Br. and its well-marked variety S. curviflora R. Br. var. glabrata (Otopappus curviflorus Hemsl., var. glabratus Coulter Bot. Gaz. 20:50) constitute a well-defined section of the genus Salmea. From S. curviflora however, the present proposed species may be distinguished by the leaves being ovate-oblong, instead of ovate-acuminate, and by the shorter, blunter, and more pubescent involucral scales.

Hab.—"Shrub, 20 feet high, not common, in forest 8 miles south of Izamal, October; flowers white, very aromatic," *Gaumer 977* (type).

ENCELIA Adans. Fam., 2:128.

Heads heterogamous, radiate, ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular (or rays sometimes wanting). Involucre hemispheric or wide campanulate of herbaceous bracts, imbri-

*Dr. Greenman's original description and notes are given in italics, additional description and notes in body type.

SALMEA GAUMERI.

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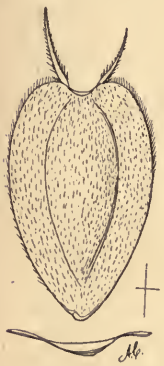
ENCELIA CHASEÆ.

cated in 2–3 series. Receptacle convex, chaffy; scales concave, enfolding or clasping the achenes, deciduous. Achene laterally flattened, margins thin, not winged; pappus (in our species) of 2 rigid awns. Herbs, or shrubby, with rather showy heads of yellow flowers.

Encelia Chaseæ Millsp. sp. nov.*

An erect, branching herb, with terete, striate, hispid stem, and branches, and alternate, deltoid-ovate (or upper lanceolate) acuminate, dentate, hispidulous leaves, abruptly tapering into a short, usually wingless (never auricled) petiole or the upper sessile. Inflorescence of solitary heads, terminal and axillary; peduncles striate, glandular, hispid, with spreading white hairs. Heads 12–14 mm. high, 2.4 cm. broad (when rays are present), ray flowers 8–10 or wanting, disk flowers numerous. Involucre wide-campanulate, bracts erect, subrigid, in 2 series, glandular-hispid, the outer shorter, lanceolate, acuminate, inner striate, long acuminate. Ray corollas yellow, ligule elliptic, bidentate, 4–7 mm. long, spreading; disk corollas cylindrical, inflated below, 5 lobed. Receptacle slightly convex; scales broad, conduplicate, erose-denticulate, mucronate, hispidulous on the keel, loosely enfolding the achenes and deciduous with them. Achene slatey brown, often mottled with a darker shade, 3.6–4 x 6–6.5 mm.; in section subconcavo-convex; obovate, subcordate at the summit, laterally much compressed, with a thin, ciliate margin, appressed pilose or the outermost nearly glabrate; awns usually unequal, denticulate-ciliate, .7–2.2 mm. long.



Hab.—Ruins of Kobah, Nov. 26, 1865, *Schott 911;* "herb, 5 feet high, common at Izamal, Oct." *Gaumer 910*, Chichankanab *2045*, San Anselmo *2046*.

Our specimens differ from E. Mexicana in having leaves never lobed, on petioles never auricled; heads larger, rays much smaller, paler, often none; achenes nearly a third larger, but in color, shape, pubescencé and awns very similar to E. Mexicana. No. *4602 Pringle* Tequila, Jalisco, referred to by Robinson and Greenman (Proc. Am. Acad. 29:388) under Encelia Mexicana Mart. closely approaches our Yucatan specimens and has achenes intermediate between those of our specimens and those of Mexicana. Concerning *Pringle 4602* Robinson and Greenman add: "While different forms of this species certainly show striking differences in the features mentioned (unlobed leaves, petioles not auricled, larger heads, and elongated involucral bracts) a series of specimens show that these characters vary quite independently of each other, forming various combinations, so that varieties based upon them could have little more than formal value."

PLAGIOLOPHUS Greenman gen. nov.

"(Verbesinæ.) Heads homogamous, several flowered. Involucral bracts 2–3 seriate, the outer series longer, foliaceous, and spreading.

*For Mrs. Agnes Chase, whose careful drawings illustrate this publication.

Receptacle short, conical: Corollas equal, regular, with slender tube ampliated above into a 5-toothed limb. Pappus of two unequal awns and one or more intermediate laciniate scales. Anthers slightly sagittate at the base, appendaged at the apex. Achenes obovate or oblong cuneate, contracted above into a short outwardly curved neck, the outer narrower, obtusely angled, and with a more or less reduced pappus, the inner strongly compressed laterally and winged. Leaves opposite. Heads of medium size, terminating the stems and branches on rather long slender peduncles. Diffusely branched herbs, slightly woody at the base, the affinity of which is with *Wedelia* and *Zexmenia*. The generic name is taken from πλάγιος and λόφος in reference to the peculiar oblique or slightly curved nature of the neck or constricted portion of the achene."

Plagiolophus Millspaughii Greenman sp. nov.

Diffusely branched from the base; stems about 4.5 dm. or more high, hirsute pubescent; leaves ovate to ovate-acuminate, 1 to 3.5 cm. long, about one-half as broad, acute, narrowed at the base into a short petiole, subentire or crenate-dentate, 3 nerved, appressed pubescent above, later becoming somewhat tuberculate-hispid, appressed canescent beneath; petioles 3 to 10 mm. in length; heads erect or sometimes nodding* 6–7 mm. high, *1 cm. or less in diameter, about 40 flowered;* involucral bracts appressed pubescent, the outer narrowly oblong, obtuse, much exceeding the disk; inner ovate, acute, ciliolate, erect; corolla white; receptacle short conoid somewhat lengthened at maturity; palea acute, pubescent at the summit; *the outer achenes slightly or not at all winged, more or less obtusely angled and hirtellous roughened, the inner bearing a rather prominent cartilaginous ciliated wing; the inner awn of the pappus about twice as long as the outer.* Achenes heteromorphous, brown, excluding wings and pappus 1–1.2 x 2.1 mm., cuneate; in section unsymmetrically biconvex; the outer achenes less compressed than the inner, wingless or nearly so, corky-tuberculate roughened, hirtellous toward the summit, pappus awns reduced to the length of the laciniate scales; inner achenes showing gradation from characters given to nearly smooth achene with wings .5–.7 mm. wide, and unequal pappus awns 1–2 mm. long.

Collected by Dr. G. F. Gaumer near Izamal, Yucatan, August to September, 1895, No. 792, and at Buena Vista Xbac, April 1896, No. 1055; Sayi in cornfields, Mch. 4, 1903, *Cæc. et Ed. Seler 3895.*

In general habit the above species bears a resemblance to Zexmenia

*In italics are given Dr. Greenman's description and notes, additional descriptive matter and notes are given in roman. The generic description is Dr. Greenman's.

PLAGIOLOPHUS MILLSPAUGHII.

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ZEXMENIA HISPIDA RAMOSSIMA.

hispida Gray; and in its involucral characters it is quite similar to the West African species Eleutheranthera dorsuosa Klatt. From the latter genus, however, our plant differs materially by the presence of distinct apical appendages to the anthers; and in the oblique neck of the achene.

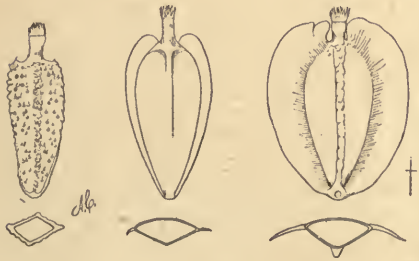
Hab.—"Herb, 18 inches, abundant in open places near Izamal, Jan. to Dec." *Gaumer 400* (*Tridax procumbens canescens* Field Col. Mus. Bot. 1:325), "herb, 4 feet high, flowers white, common in old fields, Aug. to Sept." Izamal, *792*, common in open forests Buena Vista Xbac, April, *1055* (type), San Anselmo *1963*.

ZEXMENIA Llav. et Lex. Nov. Veg. Desc., 1:13.

Heads heterogamous, radiate; ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre wide campanulate of subequal bracts, imbricated in 2 or 3 series, outer herbaceous, inner dry. Receptacle plane or convex, chaffy; scales complicate, embracing the disk flowers. Achenes in Sec. *Wedelioides:* heteromorphus, winged or wingless, constricted into a neck, pappus of laciniate scales connate into a crown, the bristles not apparent; in Sec. *Lipochæta:* dimorphous, wingless, 3 angled and 3 awned or compressed 4 angled and 2 awned, apex truncate; pappus of slender scabrous awns and minute intermediate scales, connate. Perennial herbs or slender shrubs with rather showy heads of yellow flowers.

Zexmenia hispida ramosissima Greenman Proc. Am. Acad.

An erect, perennial herb with repeatedly forking, terete, slender, hispid branches and opposite, rhombic-lanceolate, acuminate leaves tapering into a hispid-ciliate petiole, irregularly dentate, tuberculate-hispid above, paler, less harshly pubescent beneath. Inflorescence of solitary or 2 or 3 loosely clustered heads, terminating the numerous branches or in the upper axils; peduncles slender, subflexuous, hispid with spreading hairs. Heads 8 mm. high, 2–2.5 cm. broad, ray flowers 8–10, disk flowers numerous. Involucre campanulate, bracts in 2 series of 5 each, appressed, with loose or spreading tips, the outer longer, herbaceous, lanceolate, acuminate, tuberculate-hispid, especially at the base; inner membranaceous oblong, abruptly acuminate, hispid at the summit. Corollas orange yellow, ray with short tube, ligule elliptical, 8–10 mm. long, minutely bidentate, spreading; disk corollas cylindrical, 5 lobed, pubescent. Receptacle slightly convex; scales oblong, obtuse, pubescent-fimbriate at the summit. Achenes heteromorphous, those of ray flowers black with stramineous or dark wings (including wings and pappus 3.7 x 5 mm. obcordate), achene proper 1.8 x 4.5 mm.; in section depressed 3 sided, the dorsum convex, ventral angle rounded; narrowly obovate, constricted into a short neck, dorsally compressed, the lateral angles bearing wings 1 mm.



wide, usually somewhat involute at the sides, the ventral angle corky ridged; pappus of minute, laciniate scales forming a crown 5 mm. high; inner achenes 3 sided, smooth, narrowly winged; or innermost brown, 4 sided, cuneate, wingless and corky-tuberculate, hirtellous, neck and pappus as in the outer achenes.

Hab.—Tekanto, Feb. 27, *Stone 191;* "herb, 3 feet high, abundant in old fields near Izamal, Sept. to Nov." Gaumer 410b (*Wedelia hispida* Field Col. Mus. Bot. 1:326), *826* (type) (*Zexmenia hispida Ibid.*), *2501*, San Anselmo *2005*.

Called by the Mayas ZAHUM, meaning an herb to fatten cattle.

Zexmenia Costaricensis Benth. ex Oerst. in Kjoeb. Vidensk. Meddel., 95.

A slender stemmed, more or less climbing or reclining shrub, with ashy bark bearing prominent lenticels, divaricate branches, and opposite, short-petioled, ovate-lanceolate, acuminate, serrate, hispid leaves. Inflorescence of umbellate-cymes of 3–15 heads, terminating the branches; peduncles slender, subflexuous, becoming rigid, puberulent. Heads 8–10 mm. high, 3–3.2 cm. broad, ray flowers 8–15, disk flowers numerous. Involucral bracts in 2 series, appressed, oblong, abruptly acute, the outer longer, puberulent, ciliate. Corollas bright lemon yellow, ray flowers with short tubes, ligules elliptic oblong, obtuse, 10–12 mm. long, spreading; disk corollas nerved, 5 lobed. Receptacle convex; scales acuminate, rigid. Achenes fuscous, narrowly cuneate: of ray flowers 1.2 x 5–5.2 mm.; in section sharply 3 angled, the dorsum plane, lateral facets concave; hispidulous on the angles above; awns 3, 1.5–3 mm.; the ventral longest; disk achenes 1.7 x 5.7 mm.; in section compressed lozenge-shaped; hispidulous on the angles, at least the ventral; awns 2, 3.5–4 mm. long.

Hab.—Between Guayalceh and Yumuó, Oct. 2, 1865, *Schott 914;* "a shrubby climber, 20 feet high, on an artificial mound 8 miles southwest of Izamal, Nov.," *Gaumer 960, 962*, Chichankanab *2344*, Calotmul *2350*.

Called by the Mayas ZACTAH, "A loom," the woody stems having been used by the ancients as a part of their weaving frames.

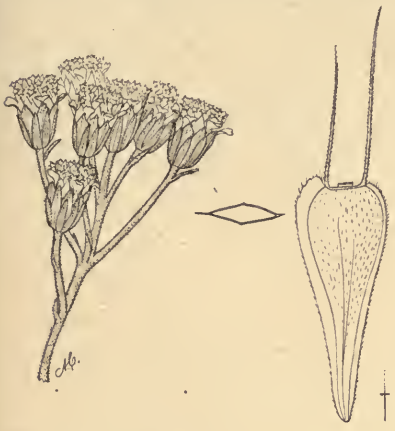
VERBESINA L. Sp. Pl., 901.

Heads heterogamous, radiate, ray flowers pistillate, fertile (or achenes abortive); ligulate disk flowers perfect, fertile, tubular. Involucre short campanulate of subherbaceous bracts imbricated in few series, the outer shorter. Receptacle convex or conic, chaffy;

scales complicate, embracing the achene, persistent on the receptacle. Achene laterally compressed, margins winged; pappus of 2 slender, rigid awns, persistent in our species. Herbs or small shrubs.

Verbesina gigantea Jacq. Ic. Pl. Rar., 1:17, t. 175.

A simple shrub with glabrate stem and large, alternate, wing-petioled, pinnately parted leaves, sparsely pubescent above, whitish tomentose beneath. Inflorescence a broad, compound, terminal, bracteate corymb, branchlets glabrate below, tomentulose toward the summit; peduncles hirsute-tomentulose. Heads 9 mm. high, 6 mm. broad, ray flowers 4–7, disk flowers about 20. Involucral bracts in 2–3 series, narrowly lanceolate, acute, pubescent, ciliolate, the outer shorter. Ray flowers inconspicuous, white, erect or spreading; corollas of disk flowers 5 lobed. Receptacle minute, convex; scales rigid, abruptly acuminate, pubescent at the summit, as long as the disk flowers. Achene fuscous, 1.5 x 4-4.2 mm., narrowly obovate, long attenuate to the base; in section compressed lozenge-shaped; pubescent except the attenuate base, margins unequally winged, wings .2–.8 mm. (usually .2–.5 mm. in our specimens) more or less ciliate; awns unequal, slender, erect hispid, 2.5–2.8 mm. long.



Hab.—Tizimin, March 28, 1866, *Schott sine num.* (*Montanoa grandiflora?* Field Col. Mus. Bot. 1:395); "common in waste lands and roadsides, 8 feet high, November," *Gaumer 1143*, Calotmul *2201*.

UCACOU Adans. Fam., 2:131.

Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre ovoid or oblong, of few subequal bracts, the outer 1 or 2 often foliaceous, inner dry. Receptacle minute, chaffy; scales membranaceous–scarious, plane, subtending the disk flowers. Achenes dorsally compressed, dimorphous, those of the rays lacerate winged on the margins, the wings at the summit united with the stout pair of awns which form the pappus; achenes of disk flowers wingless, pappus of 2 or 3 rigid more slender awns, connate at the base. Annual herbs with inconspicuous heads clustered in the axils.

Ucacou nodiflorum (L.) Hitchc. Fl. Baham., 100.

Verbesina nodiflora L.

An erect, branching herb, with strigose-hispid stem and branches, and opposite, wing-petioled, oblong-lanceolate or lanceolate-ovate, serrate, strigose-hispid leaves. Inflorescence of clusters of 1-several

heads, sessile or nearly so in the axils or terminal on the branches. Heads 9–12 mm. high, 5 mm. broad, about 15 flowered. Involucral bracts in 2 series, at first erect, more or less spreading at maturity, oblong-lanceolate, subacute, striate, the outer pair little longer, foliaceous and pubescent toward the summit, inner glabrous. Corollas yellow; rays inconspicuous, ligule 1.5 mm., bidentate, erect. Receptacle conoid; scales oblong-lanceolate, obtuse, erose-denticulate at the summit. *Ray achenes* slate color with stramineous wings; including wings but not awns 2 x 3.8 mm.; oblong-obovate; in section convexo-concave; smooth, the lacerate wings becoming corky-turgid and awned at maturity; apical awns stout, hispidulous, 1 mm. long; *disk achenes* brown, 1 x 3.8 mm., oblong-cuneate; in section subplano convex; covered with irregular, longitudinally elongated tubercles, hispidulous; awns 2 or 3, hispidulous, the middle 1–3 mm. long or wanting, lateral 4–5 mm. long.

Hab.—Merida, at the Quinta del Obispo, Nov. 15, 1864, *Schott 93* (*Synedrella nodiflora* Gaertn. Field Col. Mus. Bot. 1:397); campo about Izamal, Jan. 23, 1895, *Millspaugh Armour Exped. 185 Synedrella nodiflora* Gaertn. *Ibid.* 1:54); "herb 6–18 inches high, common in waste places near Izamal, in bloom throughout the year," *Gaumer 359, 952* (*Synedrella nodiflora* Gaertn. *Ibid.* 1:397) Calotmul *1694*, Chichankanab *2085*, San Anselmo *2086*.

BIDENS L. Sp. Pl., 831.

Heads heterogamous, radiate; ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre campanulate or subhemispheric, of narrow bracts imbricated in 2–3 series, outer herbaceous, connate at base, inner membranaceous. Receptacle plane or convex, chaffy; scales narrow, plane, subtending the disk flowers. Achenes dorsally compressed, somewhat 4 angled, linear-oblong in our species; pappus of 2–4 rigid persistent awns. Annual or perennial herbs, or slender shrubs.

Awns 2:	
Achenes spinulose	*leucantha.*
Achenes hirsute on the margins	*tereticaulis.*
Awns 4	*bipinnata.*

Bidens leucantha (L.) Willd. Sp. Pl., 3:1719.

Coreopsis leucantha L.

Bidens pilosa L. Sp. Pl. 832 the discoid form?

An erect, simple or branching annual with 4-sided striate, glabrate

stem and branches, and opposite, petioled, glabrate leaves, variously 3–5 parted (rarely simple) usually acuminate, serrate. Inflorescence a few flowered corymb, peduncles striate, minutely pubescent, becoming angled, and nearly glabrous. Heads (in flower) 7 mm. high, 20–23 mm. broad, ray flowers about 5, disk flowers numerous. Involucral bracts in 2 series, outer shorter, linear spatulate, puberulent, ciliolate, spreading at the tips; inner lanceolate, acuminate, the tips blunt and densely short pilose. Ray corollas white, tube short, ligule broadly oblong; truncate 7 mm. long, spreading; disk corollas nerved, 5 lobed. Receptacle convex; scales linear-lanceolate, acuminate, nearly equaling the disk flowers. Achene dark chestnut, .7–.8 x 8–13 mm., linear oblong; in section irregularly 4 sided or innermost 3 sided; impressed-striate, the surface cellular and sparsely covered with tawny tubercles, each bearing a spinule; awns 2, retrorsely barbed, spreading in the outer, erect in the inner achenes, 2 mm. long. The inner achenes longer and less spinescent than the outer.

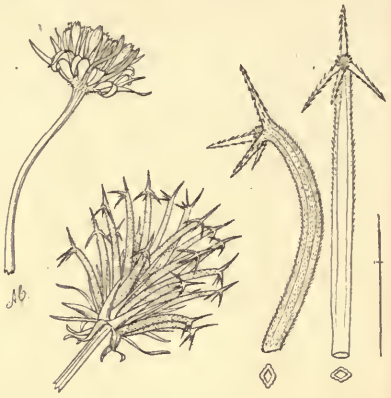
Hab.—Cozumel, 1885, *Gaumer* (Oliver) (*Bidens pilosa* L. Field Col. Mus. Bot. 1:54); campo about Izamal, Jan. 23, 1895, *Millspaugh Armour Exped. 170* (*Bidens Alausensis Ibid.*); "herb, 4 feet high, very common in waste lands, flowers pure white, Izamal, Jan. to Dec." *Gaumer 451,* "a smaller leafed form, 2 feet high, abundant at the port of Silam," *632*, Chichankanab *1469*, San Anselmo *1771*, Silam *1892*.

A species exceedingly variable in its leaf forms. Achenes sometimes merely spinulose, the tubercle obsolete or indicated by a pale spot, the spinules rarely obsolete. This species is given by authors as being radiate or discoid, and with achenes 2–4 awned; our specimens all have conspicuous white rays and 2-awned achenes. Bidens pilosa L. is given as the "discoid form" of the species named Coreopsis leucantha L. Sp. Pl. Ed. 2, 1282, in Kew Index and Griseb. Fl. Br. W. I. 373. From the meager description given by Linnæus and uncertainty as to his type it seems best to hold our plants as B. leucantha, with which they do agree, while they do not agree with B. pilosa.

Bidens bipinnata L. Sp. Pl., 832.

An erect, simple, or branched annual with obtusely 4 angled, glabrate stem, and opposite, long-petioled, bipinnate, thin, acuminate, serrate, minutely pubescent leaves. Inflorescence of solitary, terminal, and axillary long-peduncled heads, branches and peduncles glabrous, striate, becoming sulcate. Heads (in flower) 9 mm. high, 12–15 mm. broad, ray flowers about 5, disk flowers numerous. Involucre glan-

dular, hairy at the base, bracts in 2 series, loose and spreading, outer longer, linear, inner narrowly lanceolate, puberulent at the acute tip. Ray corollas yellow, inconspicuous, ligule bidentate, 2–2.5 mm. long, erect; disk corollas nerved, 5 lobed. Receptacle subconvex; scales linear, a little shorter than the disk flowers. Achenes brown or light olive, .8–1 x 10–17 mm., linear-oblong, slightly tapering to the summit, the inner erect or curved at the summit, the outer sublunate; in section irregular lozenge-shaped; impressed striate, the surface minutely papillate; inner achenes glabrate below, sparsely hispid above, the outer densely hispid; at the apex and often at the base of the achenes is a tuft of delicate gland tipped white hairs; awns 4, middle one erect, the others divergent or deflexed, retrorsely barbed, 2–3 mm. long.



Hab.—Izamal, *Gaumer 2498*, *2499*, *2504*.

Bidens tereticaulis DC. Prod., 5:598.

A climbing or reclining herb with terete, glabrous stem and branches, and opposite, slender-petioled, 3–5 parted, acuminate, serrate, nearly glabrous leaves. Inflorescence a terminal panicle of opposite, divaricate, few-flowered corymbs, branchlets and peduncles slender, terete, little striate, glabrous. Heads (in flower) 9 mm. high, 25–27 mm. broad; ray flowers 5, disk flowers numerous. Involucre sparsely pubescent at the base, bracts in 2–3 series, loose and spreading, acute, outer shorter, linear; inner linear-lanceolate. Ray corollas yellow, tube short, ligule elliptic, entire, 8–10 mm. long, spreading; disk corollas nerved, 5 lobed. Receptacle plane; scales linear-oblong, bearded at the obtuse apex, as long as the disk flowers. Achenes dark brown, 1–1.1 x 10–13 mm., linear-oblong, slightly tapering to the summit, the inner erect or nearly so, the outer slightly lunate; in section lozenge-shape; impressed striate, the surface papillate-rugose, the margins tuberculate-hirsute, otherwise glabrous; awns 2, suberect in the inner, diverging or subdeflexed in the outer achenes, slender, retrorsely barbed, 3–3.5 mm. long.

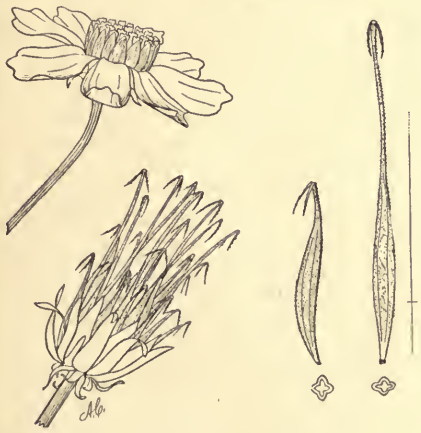
Hab.—Merida, Dec., 1864, *Schott 145;* Tunkas, March 3, 1890 *Stone 240a* (in Herb. Acad. Sci., Phil.); "ascending among shrubbery like a vine, producing its orange-yellow flowers in October, Izamal, *Gaumer 951*, San Anselmo *2083*, Chichankanab *2084*, Field Col. Mus. Cat. No. *57998*.

COSMOS Cav. Ic., 1:9, t. 14, 79.

Heads heterogamous, radiate; ray flowers neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre subhemispheric, of membranaceous bracts imbricated in 2 series, connate at the base. Receptacle plane, chaffy; scales plane or concave, subtending the disk flowers. Achene 4–5 angled, little or not at all compressed, narrow, apex attenuate in a long slender beak or rarely nearly beakless; pappus of 2–4 persistent awns. Herbs with large and showy heads of rose color or purple rays (or yellow in one species).

Cosmos caudatus H. B. K. Nov. Gen. et Sp., 4:240.

A tall, branching, annual, with glabrate or sparsely hirsute, terete, striate stem and opposite, ciliate-petioled, twice-pinnatifid leaves, the segments lanceolate, acuminate, margins entire and scabrate. Inflorescence of solitary, terminal and axillary, long-peduncled heads, peduncles striate, glabrous or sparsely hirsute. Heads (in flower) 9–10 mm. high, 3–3.5 cm. broad; ray flowers about 8, disk flowers numerous. Involucre sparsely pubescent at the base, the outer bracts herbaceous, shorter, linear-lanceolate, acute, ciliolate, loose and spreading; inner membranaceous, pale-margined, lanceolate, subacute, at first erect, somewhat spreading at maturity. Ray corollas rose-purple, tube short, ligule oblong, 3 dentate, 12 mm. long, spreading; disk corollas yellow, 5 lobed. Receptacle plane; scales lanceolate, acute, glabrous, as long as the disk flowers. Achenes dark brown, 1.5–1.6 x 15–29 mm., fusiform, tapering into a slender beak, much elongated in the inner achenes, erect or slightly curved; in section 4 lobed; scabrate, the beak strongly so; awns 2, slender, deflexed, retrorsely barbed, 3 mm. long.



Hab.—"Herb, 4 feet high, uncommon at Izamal," *Gaumer 940*, Chichankanab *2075*, near Merida *2505*, Calotmul, Field Col. Mus. Cat. No. *58001*.

Called Chacxul, "Redtop," by the Mayas, and Estrella de mar, "star of the sea," in Yucatec.

CALEA L. Sp. Pl., Ed. 2:1179.

Heads heterogamous, radiate, ray flowers pistillate, fertile, or achenes abortive, ligulate; disk flowers perfect, fertile, tubular; or heads homogamous, rays wanting. Involucre ovoid or wide campanulate of dry bracts, imbricated in several series, appressed, outer gradually shorter. Receptacle conic or convex, chaffy; scales concave, embracing the disk flowers. Achene subcompressed laterally, base attenuate; pappus of 5–20 scarious, narrow, rigid scales. Perennial herbs or shrubs.

Pappus of oblong scales 1.5 mm. long	*Zacatechichi.*
Pappus of linear scales 3.5–4 mm. long	*axillaris urticifolia.*

Calea Zacatechichi Shlecht. Linnæa, 9:589.

A much branched shrub, with terete, subglabrate or brown pubescent stem and branches, and opposite, short-petioled, thick, ovate, acute, 3-nerved, reticulate-veined, coarsely crenate-serrate (or uppermost entire) leaves, hispid on the upper surface. Inflorescence of few-flowered, irregular cymes terminating the numerous upper branches; branchlets and peduncles brown glandular-pubescent. Heads 10 mm. high, 5–6 mm. broad, about 12 flowered. Involucral bracts closely appressed in 4–6 series, broad, obtuse, the outer successively shorter more or less glandular-puberulent, the inner faintly striate. Ray flowers none, corollas of disk flowers yellow, deeply 5 cleft. Receptacle short-conoid; scales cuneate, acute, 3–5 dentate, deciduous with the achenes, loosely enfolding them. Achenes dark brown, .7 x 2.8 mm., oblong-conoid with attenuate, suboblique base; in section elliptical; clothed on the sides with long, fragile, jointed hairs, dorsum and ventrum glabrate or nearly so; pappus of 12–15 stramineous plumose-laciniate, oblong scales 1.2–1.7 mm.

Hab.—Nohpat, Nov. 24, 1865, *Schott 912.*

Called TZICIN, "unraveled," by the Mayas.

Calea urticifolia (Mill.) D. C. Prod. 5:674.

Solidago urticifolia Mill.

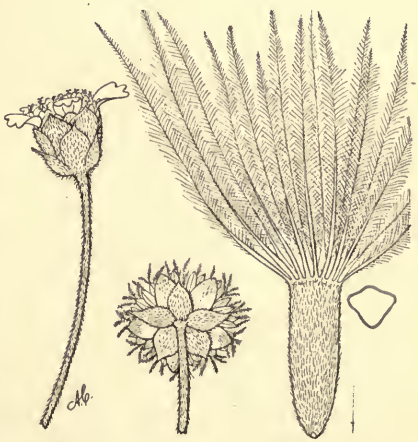
Shrubby, with terete stem and branches, brownish villous, at least when young, and opposite, short-petioled, rather thick, lanceolate-ovate, acuminate, prominently veiny, crenate leaves, scabrate above, pubescent below. Inflorescence of few-flowered, irregular cymes, terminal and axillary; branchlets and peduncles slender, brown pubescent.

Heads 10 mm. high 16 mm. broad, ray flowers 5–6; disk flowers 30–40. Involucral bracts in 5–6 series, the outermost foliaceous, bract-like, spreading, acute, puberulent; the inner appressed, broad, obtuse, membranaceous with scarious margins. Rays yellow, tube slender, ligule oblong, 3 dentate or subentire, 4–4.5 mm. long, spreading; disk corollas 5 lobed. Receptacle short conoid; scales narrow, laciniate, deciduous with the achenes, but not enfolding them. Achene dark brown, .6–.7 x 2.7 mm., oblong-obconoid with attenuate, sub-oblique base; in section elliptic; clothed, except the base, with long weak hairs; pappus of about 20 stramineous, narrow, acuminate, laciniate scales, 3.5–4 mm. long.

Hab.—Shrubby 5–6 feet high, flowers yellow, Tunkas, March 3, 1890, *Stone 243, 245* (in Herb. Acad. Sci. Phil.); "shrubby 15 feet high, ascending among shrubs in the brushlands near Izamal, *Gaumer 956*, Chichankanab *2096*, San Anselmo *2097;* Oitas, open sunny places, Mch. 17, 1903, *Cæc. et Ed. Seler 3960.*

TRIDAX L. Sp. Pl., 900.

Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre wide-campanulate or subhemispheric, of herbaceous bracts imbricated in few series. Receptacle plane or convex, chaffy; scales membranaceous, subtending the disk flowers. Achene subterete; villous; pappus of many plumose-ciliate, slender, acuminate awns. Perennial herbs with long peduncled heads of medium size.



Tridax procumbens L. Sp. Pl., 900.

A diffuse, branching, pubescent herb, more or less procumbent at the base, with opposite, petioled, lacerate-lobed, hirsute leaves. Inflorescence of solitary, long-peduncled heads, terminal and axillary; peduncles slender, retrorsely pubescent. Heads 10 mm. high, 12–15 mm. broad, ray flowers about 5, disk flowers numerous. Involucral bracts in 2–3

series, the outer little shorter, ovate, acuminate, pubescent, appressed, somewhat spreading at maturity; inner obtuse, mucronate, pubescent at the summit. Ray corollas yellow, tube slender pubescent, ligule broadly oblong, 3 lobed, 5 mm. long, pubescent beneath, ascending or spreading; disk corollas with 5 truncate, ciliolate lobes. Receptacle convex; scales oblong, pubescent at the abruptly acute tip, equaling the disk flowers, persistent on the receptacle. Achene brown, .65–.7 x 2 mm., cylindrical-obconoid; in section obtusely 3 or 4 angled, the facets subconcave; densely pale sericeous-pilose; pappus bristles about 20, stramineous, silky plumose.

Hab.—Campo about Izamal, Jan. 23, 1895, *Millspaugh Armour Exped. 218;* Yucatan, *loc. ignot.*, *Linden;* Cozumel, 1885, *Gaumer* (Oliver); common near Merida, *Valdez 89;* Feb. 11, 1903, *Cæc. et Ed. Seler 3821;* "herb 20 inches, very common in waste places near Izamal, Jan. to Dec. *Gaumer 341*, Chichankanab *1566*, *1745*, San Anselmo *1744.*

Abundant throughout, called YERBA SAN JUAN DEL MONTE, and used in domestic medicine as a refrigerant.

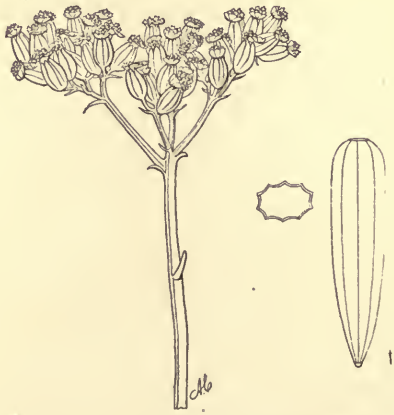
FLAVERIA Juss. Gen. Pl., 186.

Heads few flowered; heterogamous, 1 flower pistillate fertile, short ligulate, the rest perfect, fertile, tubular; or homogamous all tubular, or heads 1 flowered, ligulate or tubular, aggregated in the same glomerule. Involucre ovoid or oblong, of 2–5 carinate-concave bracts. Receptacle minute, naked. Achene subcompressed, 8–12 ribbed; pappus none. Glabrous herbs, mostly annuals.

Achene 10 ribbed	*linearis.*
Achene 12 ribbed	*trinervata.*

Flaveria linearis Lag. Gen. et Sp. Nov., 33.

A branching herb, with striate stem and branches, and opposite, sessile, more or less connate, slightly fleshy, linear or linear-lanceolate, acuminate, entire leaves. Inflorescence a dense rounded or flat-topped, compound, terminal cyme; branchlets and peduncles angled, the entire inflorescence a lurid pale greenish yellow. Heads short-pediceled, 6 mm. high, 2.3–2.5 mm. broad, 5 or 6 flowered, one ligulate. Involucre ovoid, of 5 appressed, lanceolate, acute bracts, connate at the base. Ray corolla yellow, tube slender, ligule suborbicular, 2 mm. long, entire, spreading or recurved, disk corollas, 5 lobed. Receptacle convex. Achene black, .45 x 2 mm., oblanceolate-oblong, rounded at the summit; in section oval in outline, 10 angled; angles acute, facets concave; prominently 10 ribbed, glabrous.

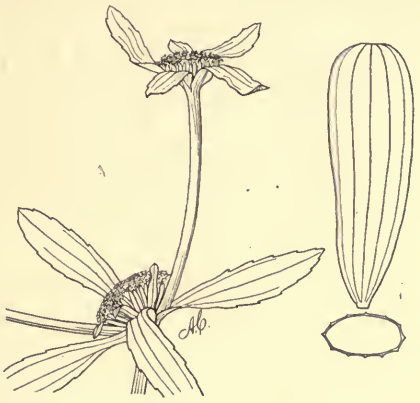


Hab.—Celestun, May 13, 1865, *Schott 408;* Cozumel, 1885, *Gaumer* (Oliver); "common along the coast," Progreso, *Gaumer 1147*, Chichankanab *2203;* "a very robust and leafy form collected in an open field south of Progreso," *Millspaugh Pl. Utowanæ 1652*, on the beach of Perez Island, Alacran Shoals *1753*.

Flaveria trinervata (Spr.) Baill. Hist. Pl., 8:55.

Oedera trinervia Spr. Bot. Gart. Halle, 63 (1800).

A divergently branched annual, with striate stem and branches, and opposite, oblong or oblanceolate, serrate, 3-nerved leaves with a narrowed petiole-like base. Inflorescence of dense glomerules, sessile in the forks or involucrate at the ends of the branches. Heads sessile, 4–5 mm. high, 1.2–1.5 mm. broad, each with a single flower, that of the outer heads of the glomerule pistillate, ligulate, of the inner perfect, tubular. Involucre oblong of 2 conduplicate, oblong obtuse bracts. Corolla tube hirsute, ligule .5 mm long; limb of tubular flower campanulate, 5 lobed. Receptacle minute. Achene black, .7x2.3 mm., oblanceolate, rounded at the summit; in section oval in outline; prominently 12 ribbed, glabrous.



Hab.—Downs of Progreso, Dec. 1865, *Schott 973* (*Flaveria repanda* Lag. Field Col. Mus. Bot. 1:395); along the coast, Progreso and Merida, *Gaumer 1147 in part.* (*Flaveria repanda* Lag. *Ibid.*), Silam *1246*, herb 2 feet high, common, Chihankanab *1377*, *1485;* ditches near Progreso, *Millspaugh Pl. Utowanæ 1653*, along the railroad south of the lagoon crossing, Progreso, *1699*, *1731* (*Broteroa trinervata* Pers. *Ibid.* 2:109).

HELENIUM L. Sp. Pl., 886.

Heads heterogamous, radiate, ray flowers pistillate and fertile or neutral, ligulate; disk flowers perfect, fertile, tubular. Involucre broad and short of linear bracts in 1 or 2 series, spreading or reflexed. Receptacle convex to subglobose, naked. Achene not compressed, turbinate, ribbed; pappus of 5 to 8, aristate or dentate scales. Herbs with punctate, bitter leaves and showy heads of yellow flowers.

Pappus of aristate scales 2–2.5 mm. long	*tenuifolium.*
Pappus of ecostate scales 3 mm. long	*quadridentatum.*

Helenium tenuifolium Nutt. Jour. Acad. Phila., 7:66.

An erect, branching annual with sulcate, glabrous, resin dotted stem, peduncles and branches, and crowded, alternate, sessile, linear punctate leaves. Inflorescence of solitary long-peduncled heads,

peduncles naked, slender, sulcate, glabrous. Heads resin dotted, 8–10 mm. high, 30 mm. broad; disk depressed globose; ray flowers 6–8, fertile, disk flowers numerous. Involucral bracts soon reflexed, in 2 series, the outer twice the length of the inner, linear, acute, punctate like the leaves and bearing on the inner surface of the slightly broadened base a prominent thick gland; inner submembranaceous, oblanceolate, acuminate, erose-denticulate, a gland less prominent than those of the outer bracts on the inner surface at the broadest part. Ray corollas yellow, tube very short, ligule cuneate, 3 lobed, 12–14 mm. long, pubescent beneath, spreading or drooping with a tendency to twist; disk corollas 5 lobed. Receptacle hemispheric. Achene brown, .9 x 1.4–1.5 mm., turbinate-obconoid, apex truncate in section hexagonal, the angles rounded the facets slightly concave, a minute intermediate angle in the center of each; densely clothed on the main angles with long, stiff, ascending, tawny hairs; pappus of 6–7 long-aristate, obovate scales, 2–2.5 mm. long.

Hab.—Fields near Uman, 1887, *Millspaugh 23*.

Helenium quadridentatum Labill. Act. Soc. Hist. Nat. Par., 1:22.

An erect, branching annual or biennial with sulcate or wing-angled, glabrous stems and branches, and alternate, long-decurrent, glabrous, punctate leaves, the lower incisely pinnatifid, the upper lanceolate, entire. Inflorescence loosely paniculate, peduncles sulcate, minutely puberulent, the summit clavate. Heads 10–12 mm. high, 15–20 mm. broad, disk globose-ovoid; ray flowers about 10, disk flowers numerous. Involucral bracts soon reflexed, in 2 series, the outer 2–3 times the length of the inner, linear, acute, pubescent; inner hyaline, linear, acute, pubescent at the summit. Ray corollas yellow, tube very short, ligule cuneate, 3 lobed, 7–8 mm. long, minutely pubescent and resin dotted beneath, drooping; disk corollas 4 lobed. Receptacle oblong-ovoid. Achene reddish brown, .5 x .7 mm., turbinate, base broad, apex truncate; in section orbicular, obscurely 10 angled; the 10 ribs villous, the internerves sparingly so; pappus of 4–6 roundish-oval, ecostate, erose-dentate scales, .3 mm. long.

Hab.—Common, 4 feet high, in waste places about Merida, *Valdez 49;* Chichankanab *Gaumer 1349.*

The name Manzanilla is applied by the Yucatecs to many globular headed compositæ, especially to this and other Heleniums, Matricarias, and Anthemi. The flowers of H. quadridentatum are strongly irritant to the pituitary membrane, and are used as a sternutatory. An infusion of the leaves is used as a remedy for stomachic colic; and the seeds, heated for a considerable time in olive oil, are employed as an application to the abdomen of children in abdominal colic.

TAGETES L. Sp. Pl., 887.

Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre cylindrical, of herbaceous equal bracts in 1 series, connate nearly to the summit. Receptacle small, naked, alveolate or fimbrilose. Achene dorsally compressed, linear; pappus of 3–6 firm, unequal scales, one or more usually produced into subulate awns. Strong-scented herbs commonly with large showy flowers.

Tagetes patula L. Sp. Pl., 1249.

An erect, branching glabrous herb with angled stem and branches and alternate, sessile, pinnately divided leaves, the divisions lanceolate or linear-lanceolate, bearing copious oil glands, sharply serrate, the serratures of the upper leaflets produced into slender bristles. Inflorescence of solitary, long-peduncled heads, terminal and axillary; peduncles clavate and fistular at the summit. Heads 2.5–2.7 cm. high, 3.5 cm. or more broad; ray flowers (normally) 5, disk flowers about 50. Involucre ellipsoid-cylindrical of 5 connate acute bracts longitudinally marked with oil glands. Ray corollas orange yellow, tube long and slender, ligule orbicular-obcordate, 1.2–1.5 cm. long, spreading; disk corollas cylindrical, 5 lobed. Receptacle short-conoid. Achene black, 1–1.2 x 9 mm.; narrowly oblanceolate; in section unequally biconvex, each surface concave in the center; obscurely striate, hispidulous on the margins; pappus of 5 connate, maculate scales, the 3 ventral truncate, short-fimbriate, 3–4 mm., the dorsal pair prolonged into subulate, hispidulous awns, 8–10 mm. long.

Hab.—On the Teocali of Kabah, Nov. 26, 1865, *Schott 708;* Calcehtoh, March 11, 1890, *Stone 273* (in herb. Acad. Sci. Phila.); campo about Izamal, Jan. 23, 1895, *Millspaugh Armour Exped. 179* (*Tagetes tenuifolia* Field Col. Mus. Bot. 1:54); "herb 3 to 6 feet high, very abundant in old fields about

Izamal, Oct. to Nov.,'' *Gaumer 476*, abundant at Tekax, Sept., *1129*, Pocoboch Field Col. Mus. Cat. No. *57892*.

The heads of the specimens from Tekax (*Gaumer 1129*) are all ''doubled''; that is, all flowers of the head are pistillate and ligulate, fertile.

Called ''XPUHUC,'' by the Mayas. ''MACENAL PUJUC'' and ''XPUHUC DE MONTE'' are local names, a combination of Spanish and Maya. The Maya name indicates that the flowers are supposed to resemble a woman with her skirts tucked up.

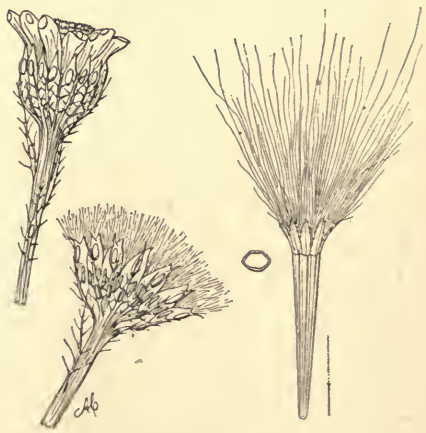
DYSODIA Cav. Anal. Cienc. Nat., 6:334.

Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre campanulate of subequal, rigid-membranaceous, bracts in 1 series, partially connate, usually with a series of loose accessory bracts. Receptacle subplane, naked, short fimbrillate. Achene subcompressed dorsally, finely many striate; pappus of 10 rigid scales, each resolved into several unequal bristles, and (in our species) an outer series of 10 small oblong scales. Herbs or shrubby plants, fetid or strong scented.

Dysodia cancellata (Cass.) Gray Proc. Am. Acad., 19:38.

Lebetina cancellata Cass.

An erect, glabrous, branching, perennial, with ribbed stems and branches, and alternate, sessile, pinnately-lobed and incised leaves bearing prominent oil glands. Inflorescence of solitary heads terminating the strict branches, peduncles ribbed, bracteolate. Heads 14–15 mm. high, nearly as broad or in fruit broader, ray flowers 9–15, disk flowers numerous. Involucre with a series of loose accessory bracts, pectinately setiferous; involucral bracts connate one-half their length, bearing below the acute tip a small spinescent keel enclosing an oblong oil gland, a pair of similar glands on each bract at about the point of separation. Ray corollas deep orange, tube long, slender, ligule oval, entire, 5 mm. long, erect or ascending; disk corollas cylindrical, 5 lobed. Receptacle convex, becoming short conoid. Achene grayish brown, .7 x 4.3 mm., linear-obconic; in section elliptic in outline, obscurely 5 sided; faintly many striate, sparingly hispidulous or glabrous; pappus double, outer series of 10 membranaceous, elliptic, minutely fimbriate scales, 1–1.2 mm.; inner of 10 scales resolved into 7–10 scabrous unequal bristles 2–7 mm. long.



Hab.—Merida, Dec. 4, 1864, *Schott 78;* ''herb 3 feet high, com-

mon in open places near Izamal Sept. to Jan." *Gaumer 304*, San Anselmo *1584*, Calotmul *1586*, Chichankanab *1672*.

Called by the Yucatecans "Cardo Santo del Monte."

POROPHYLLUM Vaill. ex L. Hort. Cliff., 494.

Heads homogamous, discoid, flowers perfect, fertile, tubular. Involucre cylindrical or narrowly campanulate of herbaceous, equal bracts in 1 series, free or connate at the base. Receptacle small, naked. Achene dorsally compressed, linear, many striate; pappus of copious slender, bristles in 1–2 series. Herbs or small shrubs with conspicuously punctate leaves and involucres.

Achene broadest in the middle, unribbed	*macrocephalum.*
lower third, slightly ribbed	*Millspaughii.*

Porophyllum macrocephalum DC. Prod., 5:648.

An erect, glabrous annual, branching above, with terete, striate stem and branches, and opposite, slender petioled, broadly elliptic, coarsely crenate leaves, a pellucid gland at the apex and subtending each sinus, and a few irregularly disposed on the leaf surface. Inflorescence of solitary, terminal; and axillary heads on upwardly thickened peduncles. Heads 25 mm. high, 12 mm. broad, 40–50 flowered. Involucre cylindrical, bracts distinct, narrowly oblong, abruptly acute, scarious margined; glands dark, linear, biseriate. Corolla greenish, 5 lobed. Receptacle convex, pitted, fimbrillate. Achene dark brown, .7 x 12 mm., linear oblong, slightly tapering at either end; in section elliptical; upwardly hispid, the hairs longer and denser toward the summit, finely striate, or the striations obsolete at maturity; pappus brown, 8 mm. long, hispidulous.

Hab.—Izamal, *Gaumer 2510.*

Our specimens have peduncles less conspicuously thickened than usual in this species.

Porophyllum Millspaughii Robinson, Field Col. Mus. Bot., 2:109.

Shrub or undershrub; stems and primary branches terete, covered with a purplish gray smoothish cortex, widely and dichotomously forked (through the habitual tendency to abortion in the terminal bud); leaves elliptical, rounded at both ends, coarsely crenate through the intrusion on each edge of 2 or 3 shallow bays, membranaceous, thin, not paler beneath, 2.2 to 3.3 cm. long, 1.4 to 1.8 cm. broad; glands intramarginal, the lateral lunate, subtending the bays, the terminal one linear, coincident with the apex of the midnerve, other glands upon the surface of the leaf wholly*

*Original description and notes in italics.

wanting, or rarely a few present; *petioles slender 5 to 10 mm. long; peduncles 1.3 to 1.8 cm. long, slender, scarcely thickened upward; involucral bracts 5, oblong linear 1.2 cm. long, scarious margined, usually browned at the tip, glands dark, linear, usually biseriate, heads usually nodding in anthesis; flowers about 18, greenish white; corolla 9 mm. long, puberulent upon the outer surface*, lobes 5, acute, spreading; receptacle convex, pitted; *achenes purplish black, somewhat attenuate and (under a lens) upwardly hispid* and finely striate, .5 x 8–9 mm.; in section elliptical; pappus of copious, slender, pale, or tawny, hispidulous bristles 5–7 mm. long.

This species is obviously related to P. Ervendbergii Gray and P. nummularium DC. It is distinguished, however, by the absence of the irregularly distributed superficial glands which are present on the leaves of both the species mentioned. It also has somewhat shorter peduncles and larger leaves.

Hab.—Merida, at the Quinta del Obispo, Nov. 15, 1864, *Schott 81* (*Porophyllum Ervendbergii* Field Col. Mus. Bot. 1:396); "shrubby, 15 feet high, common in the brushlands about Izamal," *Gaumer 523* (*Porophyllum nummularium Ibid.* 1:325); Progreso, March 5, 1899, *Millspaugh Pl. Utowanæ 1648* (type); Merida, scrubby places in old Henequen plantations, Feb. 11, 1903, *Cæe. et Ed. Seler 3831*, and sunny places near Oitas, March 17, *3975*.

Schott 81 and *Gaumer 523* have leaves with irregularly disposed glands in addition to the marginal and terminal ones, and *Millspaugh Pl. Utowanæ 1648*, the type, shows one leaf with 3 of these smaller glands. These are not, however, "superficial," but thickened like the marginal glands and emit a strong smelling oil when punctured.

Called by the Mayas XPECHUEKIL; referring to the leaf glands in their fancied resemblance to the indigenous species of wood-ticks when engorged with blood.

PECTIS L. Syst. Ed., 10:1221.

Heads heterogamous, radiate, ray flowers pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre cylindrical or campanulate, of herbaceous equal bracts in 1 series, free. Receptacle small, naked. Achene dorsally compressed, linear, pappus various: Sec. Eupectis, of few unequal scales or awns; Sec. Pectothrix, of numerous capillary bristles; Sec. Pectidium, of 1–4 subulate rigid corneous awns. Heavy scented herbs with small heads.

Pappus of thin scales	*prostrata.*
Pappus of slender erect bristles	*Schottii.*
Pappus of rigid divergent awns	*linifolia.*

POROPHYLLUM MILLSPAUGHII.

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PECTIS SCHOTTII.

Pectis prostrata Cav. Ic., 4:12, t. 324.

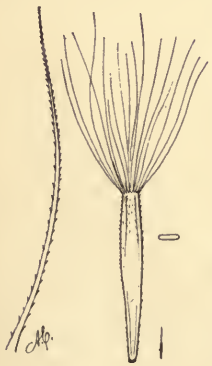
A low, diffuse, prostrate or procumbent annual, with angled stem puberulent in 2 lines, and opposite, clasping, oblanceolate, subacute leaves with a narrow membranaceous margin produced into long pectinate bristles toward the base, leaves conspicuously dotted with round oil glands. Inflorescence of terminal and axillary clusters of 1–3 sessile or subsessile heads. Heads 7.5 mm. high, 2.5–3 mm. broad, ray flowers 5, disk flowers 5 or 6. Involucre oval-cylindrical, bracts 5, oblanceolate, rounded, concave-keeled, a tuft of hairs at the subacute tip. Ray corollas reddish orange, ligule narrowly oblong, entire, 2 mm. long, erect; disk corollas 5 lobed. Receptacle minute, convex. Achene black, .5 x 3.7 mm., linear-oblanceolate; in section biconvex (or in ray achenes subplano-convex); obscurely 4 angled, papillate-striate, pilose on the angles and summit; pappus of 5 thin laciniate scales connate at base (on ray achenes reduced to 2) 1.5–2 mm. long.

Hab.—Merida, Aug. 20, 1865, *Schott 533;* along roadsides near Izamal, *Gaumer 778,* "common on roadsides in forests" Izamal *1092.*

Pectis Schottii (Fernald) comb. nov.

Pectis elongata Schottii Fernald Proc. Am. Acad. Sci. 33:78.

An erect, slender, paniculately branching annual about 35 cm. high, with scabrous or smooth-angled stem and branches and opposite, sessile, linear-oblong, apiculate, entire leaves, 1–2.5 cm. long, 1–2 mm. wide, with 3–5 pairs of bristles at the base and 2 rows of prominent oil glands beneath. Inflorescence of scattered, solitary, terminal and axillary heads on capillary, 3–4 bracteate peduncles, 2–3 cm. long. Heads 3.8–4 mm. high, 2.5 mm. broad (in flower), somewhat nodding at first, becoming erect in fruit, ray flowers 4 or 5, disk flowers 3 or 4. Involucre narrowly campanulate (widely spreading in fruit), bracts 5, becoming involute, lanceolate, acuminate, bearing a few oil glands on the thickened mid-nerve. Ray corollas greenish white, faintly tinged with purple, ligule oblong, emarginate, 1 mm. long, disk corollas whitish, nearly entire. Receptacle convex. Achene black, .25 x 2.2 mm., linear-oblanceolate; in section oblong, the angles rounded; obscurely 5 nerved, sparsely pubescent or nearly glabrous when mature, pappus of about 15 unequal rufescent, upwardly scabrous bristles, slightly dilated below, 1–2.2 mm. long.



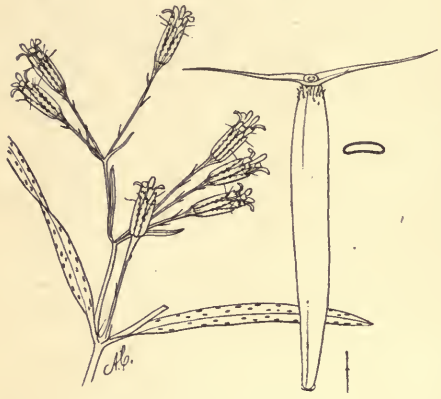
"*Much more slender* [than P. elongata H. B. K.] *with very slender*,

diffuse branches and small leaves; heads scattered and solitary in the axils, on capillary 3–4 bracteate peduncles 2–3 cm. long; involucre pale, 4 mm. high; pappus hardly equaling the achene."

Hab.—Sercania near Maxcanú, Sept. 14, 1866, *Schott 666* (type).

Pectis linifolia* L. Syst. Nat., Ed. 10:1221.

A slender, erect, branching herb, with smooth, angled stem, and branches, and opposite, sessile, linear-lanceolate, entire leaves, one or two pairs of bristles at the base, the leaves dotted with oval oil glands. Inflorescence loosely cymose-paniculate, branchlets divaricate, peduncles bracteolate, clavate at the summit. Heads 7–8 mm. high, 2 mm. broad, ray flowers 4 or 5, disk flowers 2–4. Involucre cylindrical, bracts 5, becoming involute, oblong, obtuse, a row of oil glands along the margins. Ray corollas purplish white, ligule ovate, entire, 1 mm. long, spreading or erect; disk corollas dark purple, 5 lobed. Receptacle convex. Achene black, linear-oblanceolate, .5 x 4 mm.; in section concavo-convex, the angles rounded; papillate striate, a few short thickened hairs at the summit, otherwise glabrous; pappus of 2 stiff, divergent, slender, smooth awns, 1.6 mm. long.



Hab.—"Herb, 3 feet high, common along the Chique road near Izamal," Sept. *Gaumer 887* (*Pectis punctata* Jacq. Field Col. Mus. Bot. 1:325), "on stone walls, Izamal," *979*.

Yucatan specimens differ from those of this species from the West Indies in having slightly shorter heads, achenes 2 awned (while West Indian plants examined have 3-awned achenes) with hairs only at the summit.

ACHILLEA L. Sp. Pl., 898.

Heads heterogamous, radiate; rays pistillate, fertile, ligulate; disk flowers perfect, fertile, tubular. Involucre ovoid or campanulate, its bracts appressed, imbricated in few series, the outer shorter. Receptacle convex or nearly plane, chaffy; scales membranaceous, subtending the disk flowers. Achene dorsally compressed with a narrow cartilaginous margin; pappus none. Perennial, strong-scented herbs with small, corymbose heads.

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*There has been much confusion concerning the species named P. linifolia by Linnæus. The above nomenclature is given on the authority of M. L. Fernald in his "Systematic Study of the United States and Mexican Species of Pectis" Proc. Am. Acad. Sci. 33:57-86.

Achillea Millefolium L. Sp. Pl., 899.

An erect herb, simple or branched above, with striate, pubescent stem and alternate, sessile (or basal petioled) finely dissected-pinnatifid, softly pubescent leaves, lanceolate in outline. Inflorescence of terminal, compound, crowded, convex or flat-topped corymbs; branchlets and pedicels striate, pubescent. Heads 5 mm. high, 6 mm. broad; ray flowers 5, disk flowers 12–15. Involucre ovoid, bracts thin membranaceous with a thick midrib, oblong, subacute, softly pubescent, long ciliate, resin dotted, outer shorter, narrow. Rays white, ligule orbicular, 3 dentate, 2 mm. long, spreading; disk corollas yellow, 5 lobed, resin dotted. Receptacle convex; scales oblong, fimbriate-ciliate. Achenes stramineous or white when mature, 1.6 x 2–2.2 mm., oblong-cuneate, apex truncate; in section unequally biconvex, the ventrum usually obtusely angled; glabrous.

Hab.—Campo about Merida, not in flower, April, 1887, *Millspaugh 47*. Doubtless introduced with imported hay.

Called "Alcanfor" in Yucatec.

ARTEMISIA L. Sp. Pl., 845.

Heads heterogamous, discoid, the outer 1 or 2 series, pistillate, fertile, with small slender tubular corolla; inner flowers perfect, fertile or sometimes sterile, tubular. Involucre ovoid or oblong, its bracts imbricated in few series, appressed. Receptacle flat, convex or hemispheric, naked. Achene laterally compressed, 2 ribbed or striate, the apex usually bearing an epigynous disk. Bitter aromatic herbs or shrubs with small heads disposed in polycephalous panicles.

Artemisia mexicana Willd. ex Spreng. Syst., 3:490.

Perennial by offshoots, stem striate, whitened with cottony tomentum or nearly glabrate, branching above; leaves alternate, sessile or attenuate into a petiole, narrow, lanceolate to linear, 3–5 cleft, radical cuneate, incisely pinnatifid or trifid, densely clothed with white cottony tomentum on the lower surface, sparingly so on the upper. Inflorescence an elongated leafy panicle of ascending, bracteate racemes. Heads 4–4.5 mm. high, 2 mm. broad, 10–20 flowered,

erect on short bracteate pedicels. Involucre ovoid-campanulate, arachnoid canescent, bracts in 2–3 series, the outer shorter, linear, inner broad, obtuse, scarious margined. Corollas pale yellow, those of pistillate flowers narrow, 2–4 toothed, of perfect flowers campanulate, 5 lobed, resin dotted. Receptacle minute. Achene (not fully ripe) golden brown, .5 x 1.2 mm., oblong, rounded at the base; in section oval-rhomboid or sometimes 3 sided; faintly striate, glabrous.

Hab.—"Frequent throughout the peninsula" *Valdez 40.*

Called TZITZIM,* "Wormwood" by the Mayas, and "AGENJO DEL PAIS" in Spanish. It is used throughout the peninsula by the Mayas, Mestizas, and Yucatecans as a bitter stimulant tonic, emmenagogue, and anthelmintic. Dose from 2 to 4 grams of the powdered leaves and flower heads.

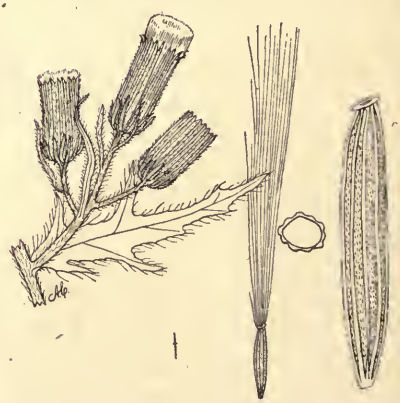
ERECHTITES Raf. Fl. Ludov., 65.

Heads heterogamous, discoid; the outer 2 to several series pistillate, fertile, filiform-tubular; inner flowers perfect, fertile, tubular. Involucre cylindrical, of numerous, erect, connivant, herbaceous equal bracts, subtended by a series of short, loose accessory bracts. Receptacle concave, naked. Achene subterete, ribbed; pappus of copious, capillary, soft, smooth, white bristles. Annual herbs.

Erechtites hieracifolia (L.) Raf. DC. Prod., 6:294.

Senecio hieracifolia L.

Erect, with striate-sulcate stem and branches, glabrate or with scattered weak hairs, and alternate, simple or pinnately lobed or incised, dentate leaves, lanceolate in outline, the upper clasping, sometimes auricled, the lower narrowed into a petiole, glabrate or with scattered hairs. Inflorescence of terminal, cymose panicles; branchlets and peduncles cobwebby pubescent. Heads 13–15 mm. high, 6–7 mm. broad, many flowered. Involucre arachnoid; bracts linear, acute, reflexed in age; accessory bracts linear, arachnoid-ciliate. Corollas yellowish white, those of pistillate flowers filiform, 4 toothed; of perfect flowers, very slender tubular, 4 or 5 toothed. Receptacle concave, becoming convex at maturity. Achene light brown, .6 x 3.8 mm., oblong, narrowed at apex and base; in section 5 sided oval in outline; 10 ribbed, interspaces pubescent, apex expanded into a small disk; pappus bright white, caducous, 12–15 mm. long.



*This appellation savors of Spanish intervention; its root, in Maya, means "essence."

Hab.—"Herb, 4 feet high, common," Buena Vista Xbac, *Gaumer 1438*, Pocoboch, *2394*.

SENECIO L. Sp. Pl., 866.

Heads heterogamous, radiate (in our species), rays pistillate, fertile, ligulate; disk flowers pertect, fertile, tubular. Involucre cylindric or campanulate, of equal herbaceous bracts in 1 series, distinct or united at the base, usually with a series of loose accessory bracts. Receptacle plane, naked. Achene subterete, 5–10 ribbed; pappus of numerous white capillary bristles. Herbs or shrubs usually with showy heads of yellow flowers.

Senecio Berlandieri (DC.) Hemsl. Biol. Cent. Am., Bot. 2:236.

Gynoxis Berlandieri DC.

A woody climber with striate, glabrous stem and branches, and alternate, petioled, ovate, acuminate, "remote, exserted-denticulate," glabrous leaves. Inflorescence of small corymbs terminating the numerous short branches; peduncles striate, glandular-puberulent. Heads 12–15 mm. high, 4.5–5 cm. broad, ray flowers 12–20, disk flowers numerous. Involucre broad turbinate, bracts linear, acute, spreading at maturity; accessory bracts numerous, linear, glandular-puberulent. Corollas orange yellow, rays with slender tube, ligule oblong, 2–4 toothed, 1.5–1.8 mm. long, spreading; disk corollas with 5-cleft campanulate limb and conspicuously elongated style branches. Receptacle alveolate. Achene light brown, .8 x 3.5 mm., oblong-ellipsoid; in section orbicular-oval in outline; 10 ribbed, hirtellous; pappus shining white, 8–10 mm. long.

Hab.—"A climber among mimosa trees near Sisal," *Schott 407*.

CARDUUS L. Sp. Pl., 820.

Heads homogamous, flowers perfect, fertile, tubular. Involucre ovoid or globose, of spiny or prickly tipped bracts imbricated in several series, appressed at the base. Receptacle plane or convex, densely villous-setose. Achene laterally subcompressed, hard; pappus of several series of slender plumose or simple bristles connate at the base. Biennial or perennial herbs with spiny or prickly foliage and large heads of usually purple or white flowers.

Carduus Mexicanus (DC.) Moric. ex DC. Prod., 6:637.

Cirsium Mexicanum DC.

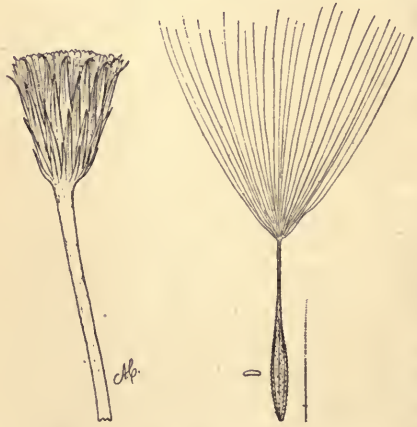
A tall herb, with striate-sulcate stem and branches, white arach-

noid toward the summit, and alternate, decurrent, pinnately sinuately lobed spinescent leaves, glabrous above, white arachnoid tomentose beneath. Inflorescence of solitary heads, terminal or in the axils of the upper leaves. Heads about 4 cm. high, 3–3.5 cm. broad, many flowered. Involucre ovoid-globose, sparingly arachnoid, with one or two subtending leaflets; bracts long acuminate, spine tipped, except the innermost, the tips loose or spreading. Corollas light purple, tube very slender, limb narrow, deeply 5 cleft. Receptacle densely clothed with soft capillary persistent bristles, 1 cm. or more long. Achene light brown, 1.6 x 5–5.5 mm., oblong-oblanceolate; in section oval; faintly nerved, smooth and shining; pappus bristles ashen, long-plumose, 2–2.5 cm. long.

Hab.—"Herb, 4 feet high, common at the port of Silam, April," *Gaumer 676* (*Cnicus Mexicanus* Hemsl. Field Col. Mus. Bot. 1:323).

CHAPTALIA Vent. Hort. Cels., t. 61.

Heads heterogamous radiate, ray flowers in 1 or 2 series, pistillate, fertile, ligulate; disk flowers perfect, all or some of them sterile, tubular, bilabiate. Involucre campanulate of narrow appressed bracts, imbricated in few series, outer gradually shorter. Receptacle naked. Achenes dorsally compressed, attenuate into a neck, 5 nerved; pappus of copious soft capillary bristles. Acaulescent perennial herbs, bearing a single head.



Chaptalia albicans Vent. ex Steud. Nom., Ed. 2, 1:344.

A scapose herb; with radical, oblanceolate, subacute, crenate-runcinate leaves tapering into a long petiole, dark green and glabrous above, white tomentose beneath. Scapes slender, 12–25 cm. long, thickened and densely white floccose at the summit, monocephalous. Heads 15–17 mm. high, 12–15 mm. broad, many flowered. Involucral bracts in 4 series, linear-lanceolate, acuminate, white floccose on the margins, at least the outer ones, inner slightly exceeding the disk, reflexed in age. Corollas purplish, rays inconspicuous, ligule oblong, 3 dentate, 2–3 mm. long, erect; disk

corollas narrow, scarcely labiate. Receptacle subconvex. Achene light brown, .6 x 5–7 mm., lanceolate, tapering into a slender neck nearly as long as the body; in section, concavo-convex; faintly 5 nerved, sparsely glandular, hirtellous; pappus bristles pinkish tawny, nearly smooth, 9 mm. long.

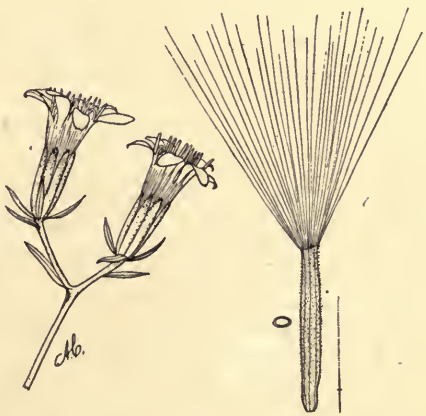
Hab.—Yot Oonot, 12 inches high, only three specimens seen, *Gaumer 1334.*

TRIXIS P. Br. Hist. Jam., 312.

Heads homogamous, flowers perfect, fertile, all with bilabiate corollas, the lower lip larger in the marginal flowers, elongated and radiatiform. Involucre cylindrical, of 1 series of equal bracts (in our species) little or not at all imbricated, subtended by a few foliaceous, loose, accessory bracts. Receptacle small, pilose. Achene dorsally compressed, linear; pappus of copious, slender bristles. Perennial herbs or shrubs with paniculately cymose heads of yellow flowers.

Trixis frutescens P. Br. Hist. Jam., 312 t. 33, f. 1.

An erect shrub with pale, terete, striate stem and branches, and alternate, short-petioled, ovate, elliptic or obovate, mucronate leaves, entire or sinuate-dentate. Inflorescence a leafy cymose panicle, the branchlets divaricate, striate, puberulent. Heads 18 mm. high, 12–15 mm. broad, 12–20 flowered, on rigid divaricate, bracteate peduncles. Involucral bracts appressed, linear-oblong, mucronate, sparingly puberulent, the summit ciliolate, accessory bracts linear lanceolate, nearly glabrous. Corollas yellow, those of the marginal flowers with a spreading, oblong, 3-dentate lower lip and a 2-cleft upper lip, the divisions recurved; inner corollas similar but divisions all equal and erect. Receptacle densely pilose. Achene brown, .6 x 6–6.5 mm., linear-oblong, slightly narrowed toward the summit; in section oval; faintly striate, pubescent with short stipular, glandular hairs; pappus bristles pale yellow, minutely upwardly scabrous, 9 mm. long.



Hab.—Merida, Feb. 2, 1865, *Schott 189;* apex of the Cerro Grande, Izamal, Jan. 13, 1895, *Millspaugh Armour Exped. 56* (*Trixis radialis* Ktze. Field Col. Mus. Bot. 1:54); common near Merida in scrubby old Henequen plantations, Feb. 11, 1903, *Cæc. et Ed. Seler 3838*; *Valdez 10* (*Trixis radiale* Lag. *Ibid.* 1:326); shrub 15 feet high, common in open lands near Izamal, Jan. *Gaumer 397* (*Trixis radiale* Ktze. *Ibid.* 1:326), Calotmul *1738, 2340*, San Anselmo *1739.*

Maya name Tokabal, "Astringent." Commonly used in the

treatment of gonorrhœa, and as an astringent in bowel complaints of children. Of this use Cuevas says:* "In infantile diarrhœa give of a maceration of the leaves in cold water a teaspoonful every two hours."

SONCHUS L. Sp. Pl., 793.

Heads homogamous; flowers perfect, fertile, ligulate, ligules 5 toothed at the truncate apex. Involucre ovoid or campanulate, becoming thickened and somewhat conic at the base when old, its bracts thin, herbaceous, imbricated in several series, outer gradually shorter. Receptacle plane, naked. Achene compressed, rounded-truncate, not beaked at the summit, ribbed; pappus of copious soft capillary bristles. Annual or perennial succulent herbs with bitter, milky juice.

Sonchus oleraceus L. Sp. Pl., 794.

A glabrous, erect annual with subangled, striate stem and branches and alternate runcinately pinnatifid or simple leaves, the segments mucronate-dentate, lower leaves petioled, upper clasping by an auricled or sagittate base. Inflorescence a corymbose panicle of few to several heads; peduncles striate. Heads 15 mm. high, about 2 cm. broad, many flowered. Involucre campanulate, sometimes cottony at base, bracts linear, subacute, glabrous, the outer loose and spreading.

Corolla light yellow, ligule oblong. Achene brown, .8 x 2.9 mm., narrowly obovate; in section biconvex; 8 ribbed, the dorsal and ventral and lateral pairs of ribs consisting of a rugose ridge, the 4 intermediate with these consisting of 2 smaller ridges with an impressed line between, interspaces faintly transversely rugose; pappus bristles bright white, 6-6.5 mm. long.

Hab.—Frequent about Merida, *Valdez 81;* "herb, 4 feet high, frequent on cultivated grounds about Izamal, July to March," *Gaumer 310*, Silam, *1588*, Chichankanab, *1596*, *1626*, Temax, *1642*, Pocoboch *1643*.

Called by the Yucatecans "CHICORIA," "ACHICORIA," or "LECHUGA SILVESTRE"; used in domestic practice as a chologogue and sedative. This species is doubtless the one referred to by Cuevas, though Dondé's description points with certainty to Taraxacum. The same names are also applied to Cichorium Intybus. These species are all used as a laxative for children.

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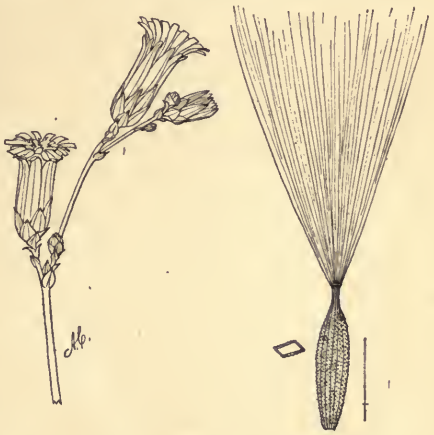
* *Ensayo Botanico* 1894 : 32.

LACTUCA L. Sp. Pl., 795.

Heads homogamous, flowers perfect, fertile, ligulate, ligules 5 toothed at the truncate apex. Involucre cylindrical or conoid, of herbaceous bracts imbricated in several series, the outer shorter, sometimes calyculate. Receptacle plane, naked. Achene compressed, ribbed, tapering into a neck or beak, which is expanded at the summit into a disk; pappus of copious soft, capillary, bristles. Tall annual, biennial, or perennial herbs with milky juice.

Lactuca intybacea Jacq. Ic. Pl. Rar., 1, t. 162.

An erect, glabrous, branching herb with terete stem and branches and alternate, runcinately pinnatifid leaves, clasping by a sagittate base, lower leaves obovate, tapering at the base. Inflorescence an elongated open panicle, branches ascending, strict, the heads distant, solitary or few in a cluster, on short, bracteate pedicels. Heads 16 mm. high, 10–11 mm. broad, 12–15 flowered. Involucre cylindrical, outer bracts short, calyculate, broadly ovate, acute, with a white hyaline margin, inner in 2 series, equal, oblong, obtuse, white hyaline margined. Corolla yellow, ligule oblong. Achene black, .8 x 3.8 mm.; fusiform, tapering into a short neck; in section rhomboid-oval; impressed striate, interspaces tuberculate-rugose; pappus bristles white or cream color, 7 mm. long.



Hab.—Herb, 3 feet high, common in old corn-fields at Silam, April, *Gaumer 877* (*Stephanomeria runcinata* Field Col. Mus. Bot. 1:325), Silam *2012;* small but fully developed specimens 15–20 cm. high, simple stemmed, from grassland near Progreso, *Millspaugh Pl. Utowanæ 1701*, taller branching plants from the same locality *1706*, *1709;* Sayi, March 4, 1903, *Cæc. et Ed. Seler 3897*.

[LACTUCA sp.?

Not in flower, "common in waste places near Merida, *Valdez 48* (*Erechtites* sp. Field Col. Mus. Bot. 1:323).]

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